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Second Sampling Event Results Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398

Alameda Point
Alameda, California

October 18, 2007

Prepared for:
Base Realignment and Closure
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San Diego, California

Prepared by:
SulTech, A Joint Venture of Sullivan Consulting Group and Tetra Tech EM Inc.
1230 Columbia Street, Suite 1000
San Diego, California 92101

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Buildings 14, 113, 162, 163A, and 398
Alameda Point, Alameda, California

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PREPARED FOR:

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TABLE OF CONTENTS

REVIEW AND APPROVAL i

ACRONYMS AND ABBREVIATIONS vi

1.0 INTRODUCTION 1

- 1.1 DOCUMENT PURPOSE AND ORGANIZATION 1
  - 1.1.1 Purpose 1
  - 1.1.2 Report Organization 1
- 1.2 FACILITY BACKGROUND 2
- 1.3 SITE DESCRIPTION 2
- 1.4 PHYSICAL SETTING 3
- 1.5 SUMMARY OF PREVIOUS INVESTIGATIONS 3
  - 1.5.1 Soil and Groundwater Investigations 3
  - 1.5.2 Previous Soil Gas Investigations 6

2.0 INVESTIGATION APPROACH 6

- 2.1 INVESTIGATION OBJECTIVES 6
- 2.2 DATA QUALITY OBJECTIVES 7
- 2.3 SOIL GAS SAMPLING PROGRAM 8
  - 2.3.1 Probe Installation 8
  - 2.3.2 Soil Gas Sampling 8
- 2.4 ANALYTICAL METHODS 10
- 2.5 DEVIATIONS FROM SAMPLING AND ANALYSIS PLAN 10
- 2.6 TECHNICAL OR REGULATORY STANDARDS 11

3.0 SOIL GAS SAMPLING RESULTS 11

- 3.1 LEAK TESTING RESULTS 11
- 3.2 SOIL GAS RESULTS SCREENED AGAINST COMPARISON CRITERIA 11
  - 3.2.1 Building 14 11
  - 3.2.2 Building 113 12
  - 3.2.3 Building 162 12
  - 3.2.4 Building 163A 13
  - 3.2.5 Building 398 13
- 3.3 UTILITIES LINE ASSESSMENT 13

TABLE OF CONTENTS (Continued)

3.4 DATA QUALITY 14

4.0 HUMAN HEALTH RISK ASSESSMENT 15

4.1 SELECTION OF CHEMICALS OF POTENTIAL CONCERN 16

4.2 VAPOR INTRUSION MODEL 16

4.3 INPUT PARAMETERS USED IN SOIL GAS MODELING 16

4.3.1 Soil Properties and Soil Characteristics 16

4.3.2 Building Parameters 17

4.3.3 Soil Gas Concentrations 17

4.3.4 Vapor Intrusion Modeling Results 18

4.4 CALCULATION OF RISK ESTIMATES 18

4.5 RISK EVALUATION RESULTS 19

4.5.1 Building 14 20

4.5.2 Building 113 20

4.5.3 Building 162 20

4.5.4 Building 163A 20

4.5.5 Building 398 21

4.6 UNCERTAINTY ANALYSIS 21

5.0 SUMMARY 23

6.0 RECOMMENDATIONS 24

7.0 REFERENCES 25

Appendix

A September 2006 and March 2007 Sampling Results

B January 2006 Sampling Results

C September 2006 and March 2007 Data Validation

D Responses to Regulatory Agency Comments

LIST OF FIGURES

1 Alameda Point Location Map

2 Chlorinated Solvent Plume in Groundwater

3 Total VOC Concentrations in Soil Gas

4 Conceptual Vapor Pathway Model

5 Soil Gas Results Building 14

6 Soil Gas Results Buildings 113, 162, and 398

7 Soil Gas Results Building 163A

LIST OF TABLES

1 Data Quality Objectives

2 Summary of Soil Gas Probe Installations

3 Summary of Sample Dilutions

4 Comparison Criteria for VOC in Soil Gas

5 Summary of Leak Testing Results

6 Building 14 Statistical Summary of Soil Gas Results, September 2006 Sampling Event

7 Building 113 Statistical Summary of Soil Gas Results, September 2006 Sampling Event

8 Building 162 Statistical Summary of Soil Gas Results, September 2006 Sampling Event

9 Building 163A Statistical Summary of Soil Gas Results, September 2006 Sampling Event

10 Building 163A Statistical Summary of Soil Gas Results, March 2007 Sampling Event

11 Building 398 Statistical Summary of Soil Gas Results, September 2006 Sampling Event

12 Building 14 Exposure Point Concentration Summary, September 2006 Sampling Event

13 Building 113 Exposure Point Concentration Summary, September 2006 Sampling Event

14 Building 162 Exposure Point Concentration Summary, September 2006 Sampling Event

15 Building 163A Exposure Point Concentration Summary, September 2006 Sampling Event

16 Building 163A Exposure Point Concentration Summary, March 2007 Sampling Event

17 Building 398 Exposure Point Concentration Summary, September 2006 Sampling Event

18 Summary of Input Parameters

19 Cancer Risk and Noncancer Hazard Summary for Commercial/Industrial Receptor, September 2006 Sampling Event

20 Cancer Risk and Noncancer Hazard Summary for Commercial/Industrial Receptor, March 2007 Sampling Event

ACRONYMS AND ABBREVIATIONS

µg/L	Microgram per liter
µg/m³	Microgram per cubic meter
95 UCL	95th percentile upper confidence limit on the arithmetic mean
AST	Aboveground storage tank
BCT	BRAC Cleanup Team
bgs	Below ground surface
BRAC	Base Realignment and Closure
Cal/EPA	California Environmental Protection Agency
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CHHSL	California human health screening level
COC	Chain of custody
COPC	Chemical of potential concern
DCA	Dichloroethane
DCE	Dichloroethene
dP	Pressure difference
DQO	Data quality objective
DTSC	Department of Toxic Substances Control
EPA	U.S. Environmental Protection Agency
EPC	Exposure point concentration
ESL	Environment screening level
g/cm-s²	Gram per centimeter per second squared
HI	Hazard index
HQ	Hazard quotient
IPA	Isopropyl alcohol
L/m	Liter per minute
m³/day	Cubic meter per day
mg/kg-day	Milligram per kilogram per day
mL/min	Milliliter per minute
NAS	Naval Air Station
NCEA	National Center of Environmental Assessment

NCP	National Contingency Plan
NPL	National Priority List
OEHHA	Office of Environmental Health Hazard Assessment
OU	Operable Unit
PAH	Polynuclear aromatic hydrocarbons
PARCC	Precision, accuracy, representativeness, completeness, and comparability
PCE	Tetrachloroethene
PID	Photoionization detector
PRC	PRC Environmental Management, Inc.
QA	Quality assurance
QC	Quality control
RAGS	Risk Assessment Guidance for Superfund
RfD	Reference dose
RI	Remedial investigation
SAP	Sampling and analysis plan
SF	Slope factor
TCA	Trichloroethane
TCE	Trichloroethene
Tetra Tech	Tetra Tech EM Inc.
TO	Toxic Organics
UST	Underground storage tank
VOC	Volatile organic compound
Water Board	San Francisco Bay Regional Water Quality Control Board

1.0 INTRODUCTION

This technical memorandum presents the September 2006 second round sampling results of the subslab investigation for volatile organic compounds (VOC) in soil gas beneath the concrete slab-on-grade floors of Buildings 14, 113, 162, 163A, and 398, which are located in Operable Unit (OU) 2B at Alameda Point in Alameda, California (see Figures 1 and 2). This technical memorandum also presents the results of resampling the two soil gas probes inside Building 163A conducted on March 7, 2007. The first round of sampling was conducted in January 2006 and the results were presented in a technical memorandum dated December 20, 2006 (Tetra Tech EM Inc. [Tetra Tech] 2006). The data from these sampling events were used to evaluate the potential risk from vapor intrusion to occupants of buildings that are leased and occupied by tenants (Buildings 14, 113, 162, 163A, and 398) and that overlie the VOC plume (see Figure 2). Buildings that are not occupied by tenants, such as Buildings 430, 627, 414, 373, and 360, and that overlie the contaminant plume are of potential concern for vapor intrusion for future scenarios; however, these buildings are not included in this investigation. The investigation involved installing soil gas probes beneath the slab-on-grade floors of Buildings 14, 113, 162, 163A, and 398 and collecting soil gas samples from each of the probes for chemical analysis during two initial sampling events (January 2006 and September 2006) and a resampling of Building 163A (March 2007).

1.1 DOCUMENT PURPOSE AND ORGANIZATION

The following sections describe the purpose and organization of the report.

1.1.1 Purpose

This subslab soil gas investigation evaluates the potential risk from vapor intrusion to building occupants. All chemicals detected in soil gas at each occupied building at OU-2B were evaluated further using (1) vapor intrusion modeling to model soil gas concentrations into indoor air, and (2) risk assessment equations to estimate cancer risk and noncancer hazards from inhalation of vapors in indoor air. This technical memorandum presents a summary of the results and risk assessment findings from the first sampling event and the second soil gas sampling event, and the interpretations, conclusions and recommendations.

1.1.2 Report Organization

The remainder of this section provides background information on Alameda Point and the specific areas that were the subject of this investigation. Section 2.0 presents the investigation approach, Section 3.0 presents the sampling results, Section 4.0 discusses the human health risk assessment, and Section 5.0 provides the summary and conclusions for subslab soil gas investigation. Section 6.0 provides the recommendations. Section 7.0 is a list of references. Figures, tables, and appendices follow Section 7.0.

1.2 FACILITY BACKGROUND

Originally a peninsula, Alameda Island was detached from the mainland in 1876 when a channel was cut to link San Leandro Bay with San Francisco Bay. Before 1930, at least two large industrial sites—a borax processing plant and an oil refinery—were located near what is now the eastern end of Alameda Point. The filled land was partially occupied by the Alameda Airport, a city-owned facility, and Benton Field, a minor U.S. Army Air Corps installation. The U.S. Department of the Army acquired the Alameda Point site from the City of Alameda in 1930 and began construction in 1931. The Navy acquired title to the land from the Army in 1936 and began building the air station called Naval Air Station (NAS) Alameda in response to the military buildup in Europe before World War II. NAS Alameda was commissioned on November 1, 1940. After the United States entered the war in 1941, more land was acquired adjacent to the air station. When the war ended, NAS Alameda returned to its original primary mission of providing facilities and support for fleet aviation. During its history, NAS Alameda housed 60 military tenant commands for a combined military and civilian work force of more than 18,000 personnel.

The Navy began investigations of contaminated sites in 1982 under the auspices of the Navy Assessment and Control of Installation Pollutants program. The Navy's procedures and priorities for conducting environmental investigations and cleanups have evolved, partly in response to events such as the closure of NAS Alameda in April 1997, under the Base Closure and Realignment Act, and the designation of Alameda Point as a National Priority List (NPL) site in July 1999 (U.S. Environmental Protection Agency [EPA] 1999a). When NAS Alameda was listed for closure, responsibility for the environmental cleanup program at Alameda Point passed to the Base Realignment and Closure (BRAC) Cleanup Team (BCT). At Alameda Point, the BCT comprises representatives from Navy, EPA, and the California Environmental Protection Agency's (Cal/EPA) Department of Toxic Substances Control Board (DTSC) and San Francisco Bay Regional Water Quality Control Board (Water Board). The listing of Alameda Point on the NPL invokes the applicable requirements of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and requires EPA concurrence prior to the final classification of any property as uncontaminated. The Navy and EPA negotiated and signed a Federal Facility Agreement in 2001, and DTSC and Water Board signed the agreement in 2005.

NAS Alameda was identified for closure in 1993. In April 1994, the City and County of Alameda signed a Joint Powers Agreement and established the Alameda Reuse and Redevelopment Authority. The U.S. Department of Defense recognized the Alameda Reuse and Redevelopment Authority as the responsible entity for submitting and completing the community reuse plan for NAS Alameda. In 1997, the base closed, and the Navy began the process of property transfer to the City of Alameda.

1.3 SITE DESCRIPTION

A comprehensive OU strategy was developed as a management tool to accelerate site investigation, cleanup, and reuse. This strategy separates 35 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites into 10 OUs (OU-1, OU-2A,

OU-2B, OU-2C, OU-3, OU-4A, OU-4B, OU-4C, OU-5, and OU-6). A remedial investigation (RI) (SulTech 2005a) was conducted at OU-2B at Alameda Point (see Figure 2). The CERCLA sites that make up OU-2B are Site 3 – the Abandoned Fuel Storage Area; Site 4 – Building 360 (Aircraft Engine Facility); Site 11 – Building 14 (Engine Test Cell); and Site 21 – Building 162 (Ship Fitting and Engine Repair). The buildings that are being investigated for the subslab soil gas investigation include Buildings 14 (located at Site 11), 113 (located at Site 21), 162 (located at Site 21), 163A (located at Site 4), and 398 (located at Site 21).

1.4 PHYSICAL SETTING

Alameda Point is located at the western end of Alameda Island, which lies at the base of a gently westward-sloping plain that extends from the Oakland-Berkeley hills on the east to the shore of San Francisco Bay on the west (see Figure 1). San Francisco Bay also borders the island to the south, and the Oakland Inner Harbor borders the island to the north (SulTech 2005a).

The San Francisco Bay area experiences a maritime climate, with mild summer and winter temperatures. Prevailing winds in the San Francisco Bay area are from the west. Because of the varied topography of the San Francisco Bay Area, climatic conditions vary considerably throughout the region. Heavy fogs occur on an average of 21 days per year. Rainfall occurs primarily from October through April. Alameda Point averages 18 inches of rainfall a year. There are no naturally occurring surface streams or ponds at Alameda Point, so precipitation either returns to the atmosphere by evapotranspiration, runs off in the storm drain system that discharges to San Francisco Bay, or infiltrates to groundwater (SulTech 2005a).

Physical features at Alameda Point include runways, streets, buildings, fuel lines, underground storage tanks (UST), aboveground storage tanks (AST), and utility lines (sanitary sewer, storm sewer, water, and power lines). Some fuel lines, USTs, and ASTs have been removed, and others have been closed in place.

1.5 SUMMARY OF PREVIOUS INVESTIGATIONS

Previous investigations of VOCs at the site have involved collection of soil and groundwater samples as well as soil gas samples for studies at OU-2B. These results are presented in detail in the RI report for OU-2B (SulTech 2005a). These investigations are described in the paragraphs that follow.

1.5.1 Soil and Groundwater Investigations

Previous soil and groundwater investigations at OU-2B were conducted in the Phases 1, 2A, 2B, and 3 investigations performed under the Installation Restoration Program. Results for Sites 3 and 4 from investigations during Phases 1 and 2A were summarized in the Phases 1 and 2A report (PRC Environmental Management, Inc. [PRC] and Montgomery Watson 1993). Results for

Sites 4, 11, and 21 from investigations conducted during Phases 2B and 3 were summarized in the Phases 2B and 3 report (PRC and James M. Montgomery Consulting Engineers, Inc. 1992).

Two follow-on investigations were conducted during 1994 and 1995 to collect data to fill the gaps from the Phases 1 and 2A and Phases 2B and 3 investigations. Results for Site 4 were summarized in the data transmittal memorandum for Sites 4, 5, 8, 10A, 12, and 14 (PRC and James M. Montgomery Consulting Engineers, Inc. 1996), and results for Sites 3, 11, and 21 were summarized in the data transmittal memorandum for Sites 1, 2, 3, 6, 7A, 7B, 7C, 9, 10B, 11, 13, 15, 16, 19, and the Runway Area (PRC and Montgomery Watson 1995).

Between 1995 and 1997, the storm sewer lines (formerly Site 18) were sampled and cleaned out, and sediment was removed from manholes and catch basins. The Navy Public Works Center conducted Phase 1 of this removal action in 1995 as a CERCLA time-critical removal action (International Technology Corporation 1997). It entailed vacuum-cleaning sediment and debris from storm sewer catch basins and manholes for Outfalls H, I, and J, which are associated with storms drains in OU-2B. Phase 2 of the removal action was completed by 1997 and involved additional cleaning of all manholes and subsystems throughout the base, including Outfalls G, H, I, and J, which are located in OU-2B. The storm sewer bedding was also investigated as a preferential pathway in the "Draft Final Storm Sewer Study Report, Alameda Point" (Tetra Tech 2000).

In 2001, supplemental RI data gaps samples were collected at Sites 3, 4, 11, and 21. Results were summarized in the "Data Summary Report, Supplemental Remedial Investigation Data Gap Sampling for Operable Units 1 and 2" (Tetra Tech 2002).

Beginning in 2002, a quarterly basewide groundwater monitoring program was implemented and continued through summer 2005. Groundwater monitoring was conducted in the fall, winter, spring, and summer. Results are summarized in the groundwater monitoring report for each Installation Restoration site (Innovative Technical Solutions, Inc. 2006).

In 2002, a background investigation of polynuclear aromatic hydrocarbons (PAH) was conducted. Results are summarized in the "Draft Technical Memorandum for the PAH Background Study for Alameda Point" (Bechtel Environmental, Inc. 2002). A basewide PAH investigation was conducted at the CERCLA sites in 2003.

Findings from Previous Investigations

- **Site 3 Soils**: Chemicals detected in soil across Site 3 are consistent with historical activities at the site, which included fuel storage. Two VOCs, benzene and ethylbenzene, were detected in soil at concentrations that exceed screening criteria and appear to be localized near fuel lines in the western portion of Site 3. These VOCs detected in soil were not detected in groundwater samples collected using direct-push techniques in the northern area of the site.

- **Site 4 Soils:** Chemicals detected in soil across Site 4 are consistent with historical activities at Building 360, including painting, blasting, degreasing, solvent cleaning, and plating aircraft parts, with activities at Building 372, including use of petroleum-related compounds, and with landscaping in the field area east of Building 360. The chlorinated compounds detected in soil included 1,1,1-trichloroethane (TCA), 1,1,2,2-tetrachloroethane, 1,1-dichloroethane (DCA), 1,1-dichloroethene (DCE) 1,2-dichlorobenzene, 1,4-dichlorobenzene, 1,2-DCE, chlorobenzene, styrene, tetrachloroethene (PCE), trichloroethene (TCE), and vinyl chloride. The presence of these compounds in soil is related to the use of solvents. Benzene, toluene, ethylbenzene, and xylene were detected in samples collected across Site 4. Most of the detections were in samples collected near Building 372 and the engine testing facility. The presence of these compounds in soil is related to use of petroleum products at the site.

- **Site 11 Soils:** Chemicals detected in soil across Site 11 are consistent with historical activities at Building 14, including jet engine testing, equipment cleaning and repair, and use of petroleum products. Most of the maximum detected concentrations of those chemicals related to solvents and fuel (benzene, toluene, ethylbenzene, and xylenes; lead; chlorobenzene; and methylene chloride) were detected in soil near fuel lines, an UST, and ASTs located in the southern portion of Site 11. The highest concentrations of chlorobenzene and methylene chloride occur at sample locations just south of the site boundary and far from Building 14, where they may have been used. Methylene chloride may be associated with solvents used during paint stripping operations at Alameda Point or possibly is the result of laboratory contamination during analysis of samples. Chlorobenzene is likely associated with the petroleum USTs or fuel lines located southwest of Building 14.

- **Site 21 Soils:** Most of the chemicals detected in soil across Site 21 are consistent with historical activities at Buildings 162, 398, and 113, including painting, paint stripping, sandblasting, jet engine maintenance and testing, equipment cleaning, and use of petroleum products. The maximum concentrations of benzene and xylene at Site 21 are located in soil near an industrial waste treatment line south of USTs 398-1 and 398-2. Benzene and xylene are likely the result of total petroleum hydrocarbons contamination at the site. The maximum concentrations of TCE and acetone were detected in soil near the industrial waste treatment line in the southern part of Building 162. This line is the only location where TCE was detected in soil, and acetone was detected at only one other location in soil. TCE and acetone were likely used in Buildings 162, 398, and 113 as degreasers and cleaners. The maximum concentration of toluene was detected below Building 113. Toluene detected in soil near Building 113 is likely the result of petroleum hydrocarbons releases into the soil.

- **OU-2B Groundwater:** Most of the chemicals detected in groundwater across OU-2B are consistent with historical activities at Sites 3, 4, 11, and 21, which included painting, paint stripping, and equipment cleaning and repair. In several areas, chemicals were apparently released to soil and migrated to groundwater, were released directly to groundwater, or were released to storm sewer lines that drained into the Seaplane Lagoon. Chlorinated solvents and their breakdown products (TCE, 1,2-DCE, PCE, vinyl chloride, dichlorobenzene, TCA, and DCA) were detected in groundwater samples across OU-2B, with the highest concentrations in the samples collected near Building 360. The chlorinated solvents in groundwater probably originated at Building 360 and have migrated west of Buildings 14, 113, and 162 (see Figure 2). Concentrations of TCE, DCE, TCA, and vinyl chloride generally decrease in samples collected closer to the Seaplane Lagoon. In addition, a secondary source of TCE and TCA may be dense nonaqueous-phase liquid located north of and beneath Building 360.

1.5.2 Previous Soil Gas Investigations

Soil gas samples were collected during the Phase 2A (International Technology Corporation 2001) and supplemental RI data gaps sampling event (Tetra Tech 2001, 2002) to support vapor intrusion modeling in the baseline human health risk assessment. These samples were collected because vapors can emanate from the subsurface, where there is the potential for migration upward into indoor air.

At Site 3, 12 soil gas samples were collected at depths ranging from 0.5 to 7.0 feet below ground surface (bgs). At Site 4, 18 soil gas samples were collected at depths ranging from 0.5 to 5.5 feet bgs. At Site 21, four soil gas samples were collected at depths ranging from 0.5 to 4.0 feet bgs, and no soil gas samples were collected at Site 11. Soil gas samples were collected near areas where the maximum concentrations of VOCs were detected in groundwater. The soil gas results are presented as total VOC concentrations on Figure 3.

2.0 INVESTIGATION APPROACH

This section presents the approach to the subslab soil gas sampling investigation, including the purpose of the investigation, the data quality objectives (DQO), the sampling program, and the criteria used to evaluate the data and assess potential risk.

2.1 Investigation Objectives

The principal objective of the subslab soil gas investigation is to obtain data to evaluate whether VOCs, if present in soil gas, are at concentrations that can lead to vapor intrusion into structures and cause an unacceptable exposure to building occupants. Initially, a baseline human health risk assessment was conducted as part of the RI at OU-2B to estimate human health risks associated with possible exposure to site-related chemicals (SulTech 2005a). An exposure assessment was conducted to identify potential human receptors in current contact with or that could contact environmental media (both soil and groundwater) in the future. The principal objective of the RI exposure evaluation was to identify the reasonable maximum exposure.

The baseline human health risk assessment for OU-2B used two models to evaluate potential exposure to chemicals present in soil or groundwater. The Johnson-Ettinger (1991) and ASTM International (1995) models were used to estimate concentrations in indoor and outdoor air for an inhalation exposure pathway as a result of vapor intrusion from VOCs in groundwater (EPA 2002b). These models are considered screening tools; they typically overestimate exposure and, consequently, risk. Based on the RI modeling results, VOC concentrations in groundwater may be high enough and may be of concern for potential vapor intrusion into some buildings at OU-2B.

To meet the subslab soil gas investigation objective, soil gas samples were collected from the first permeable layer below the concrete slab-on-grade floors of Buildings 14, 113, 162, 163A, and 398. Additionally, soil gas samples were collected from the fill near utility lines beneath these buildings. The soil gas probes installed to assess the utilities lines are summarized below:

Probe Identification No.	Utility Line Investigated	Distance from Probe to Utility Line
14SG-09	Fuel line	Within 2 feet
14SG-11	Sewer and fuel lines	Within 1 foot of sewer line and within 10 feet of fuel line
162SG-02	Sewer line	Within 3 feet
162SG-18	Electrical line	Within 3 feet

A conceptual vapor pathway model of the soil gas investigation is shown on Figure 4. In accordance with the sampling and analysis plan (SAP) (SulTech 2005b), soil gas probes were installed at the locations presented on Figures 5, 6, and 7.

All soil gas samples collected for the subslab soil gas investigation were analyzed for VOCs by EPA Method Toxic Organics (TO)-15 (EPA 1999b). Two rounds of soil gas samples have been collected to evaluate seasonal or temporal variations. As stated in Section 1.0, this technical memorandum presents the results of the second round of sampling and the results of resampling the two soil gas probes inside Building 163A conducted on March 7, 2007.

2.2 DATA QUALITY OBJECTIVES

DQOs are qualitative and quantitative statements developed through the seven-step DQO process (EPA 2000a, 2006a). The DQOs clarify the study objective, define the most appropriate data to collect and the conditions under which to collect the data, and specify tolerable limits on decision errors that will be used as the basis for establishing the quantity and quality of data needed to support decision-making. The DQOs are used to develop a scientific and resource-effective design for data collection. The seven steps of the DQO process for this project are presented in Table 1.

2.3 SOIL GAS SAMPLING PROGRAM

This section presents the method used to install the subslab soil gas probes, soil gas sampling procedures, analytical methods, and technical and regulatory standards.

2.3.1 Probe Installation

Subslab soil gas probes were installed in the fill directly beneath the building foundations using a concrete corer and rotary-hammer drill to drill through the slab foundation at the locations shown on Figures 5, 6, and 7. The soil gas probes are semipermanent installations consisting of a 0.25-inch diameter polyethylene tubing with a permeable probe tip (see Figure 4). Soil gas probes were installed within the subslab fill immediately beneath the concrete slab (5 inches or less beneath the slab) of each building to be sampled. Soil gas probes were also installed in the subslab fill near utility lines beneath the buildings to be sampled. Table 2 provides a summary of the soil gas probe installations.

A sand pack (#2/12 sand) was placed in the annular space around the tip of the vapor probe. Teflon sheeting was placed between the probe tip and blank tubing. Bentonite powder was used to fill the borehole annular space around the probe tubing to the base of the concrete foundation. Deionized water was used to hydrate the bentonite powder. The probe tubing was tightly secured to the foundation slab with quick-setting, non-shrinking grout. Surface completion for each probe consisted of a recessed threaded fitting and a brass plug so that the probe completion is flush with the foundation slab. A minimum of 48 hours was required after sample probes were installed and before soil gas samples were collected to allow subsurface conditions to equilibrate. Soil gas samples were collected in accordance with the SAP (SulTech 2005b) and analyzed by modified EPA Compendium Method TO-15 (EPA 1999b).

Sampling locations were surveyed after soil gas probes were installed and samples collected. All locations were surveyed to the nearest 0.1 foot vertically and horizontally by a licensed California surveyor.

2.3.2 Soil Gas Sampling

Soil gas samples were collected in 1-liter Summa canisters that were certified clean and evacuated to -30 millimeter of mercury by the laboratory that supplied the canisters. All soil gas samples were analyzed by EPA Method TO-15. The procedures for sample collection are summarized below.

- **Purge Volume** – At least three purge volumes were extracted using a manifold equipped with pressure gauges and open/close valves and a 6-liter Summa canister with negative pressure before sampling to ensure that stagnant or ambient air was removed from the sampling system and that samples collected are representative of subsurface conditions. The purge volume was estimated based on a summation of the volume of tubing used and the annular space around the probe tip. For example, 9.6 milliliters per foot was used to estimate the volume of stagnant air in the 1/4-inch (outside diameter) tubing, and 12.8 milliliters per inch was used for the annular space around the probe tip.

- **Purging and Sampling Flow Rates** – The flow rates for both purging and sampling was between 100 and 200 milliliters per minute (mL/min). A flow restricting valve was attached to the Summa canister to regulate the flow rate.

- **Leak Testing** – Leak testing was conducted at each soil gas probe location to determine if leaks have occurred. A pure tracer compound of 91 percent isopropyl alcohol (IPA) was used as the leak check compound. Immediately before samples were collected, IPA was added to a cotton ball and placed within 6 inches of the probe being sampled to assess whether ambient air can enter the sampling system from leaks along the sample train or if cross contamination was occurring during sampling.

- **Soil Gas Sampling** – After the subslab soil gas probe was adequately purged to remove stagnant or ambient air, a soil gas sample was collected using a 1-liter Summa canister with a negative pressure of -30 millimeters of mercury. The Summa canister was attached to a sampling apparatus consisting of a flow regulator (preset at a flow rate of 100 to 200 mL/min), which is attached directly to the Summa canister, an inline manifold equipped with pressure gauges and open/close valves and a 6-liter Summa canister used for removing the stagnant air before sampling, and 0.25-inch (inside diameter) Tygon tubing to attach the sampling apparatus to the probe. After the sampling apparatus was connected to the probe, the stagnant air was purged from the system using the 6-liter Summa Canister. Generally, 300 milliliters of stagnant air was removed from each sampling probe before a sample was collected. After the stagnant air was purged from the system, the valve on the 1-liter Summa canister for collecting the sample was opened, which allows the evacuated canister to draw in soil gas until the canister reaches ambient pressure. When approximately 5 millimeters of mercury remained on the vacuum gauge, the sampling valve was closed and the canister was removed from the sampling line. The final vacuum was recorded on the field form and the chain-of-custody (COC) form. Closing the valve with 5 millimeters of mercury remaining allows the laboratory to monitor for leaks. After the soil gas sample was collected, the Summa canister was labeled with a sample tag attached to the handle of the canister. The label information was then recorded in the field logbook and on the COC form.

2.4 ANALYTICAL METHODS

The analytical method used to analyze the soil gas samples was EPA Method TO-15. In total, 46 samples (including four duplicates) were collected for the second round (September 2006) of soil gas sampling and submitted for chemical analysis to AirToxics Ltd. in Folsom, California. The two samples collected during the resampling of Building 163A in March 2007 were analyzed by H&P Mobile Geochemistry in Carlsbad, California. All samples submitted to the laboratory were screened using a photoionization detector to determine if sample dilutions were required before the samples were analyzed by EPA Method TO-15. Sample dilutions and data quality are discussed below in Section 3.2.

2.5 DEVIATIONS FROM SAMPLING AND ANALYSIS PLAN

Deviations from the SAP (SulTech 2005b) for the subslab soil gas investigation are summarized below:

- Some of the probe locations in Building 14 were moved to assess if the utility corridors are a preferential pathway for transport of VOCs (see Table 1, Step 2, Item 2). As stated in Section 1.2.1 of the SAP (SulTech 2005b): "Additionally, soil gas samples will be collected from the fill near utility lines beneath these buildings, if utilities are present beneath the foundation." As a result, probe 14SG-01 was moved to target both the sanitary sewer and fuel lines, and probe 14SG-09 was moved to target the fuel lines.

- The proposed soil gas probe 14SG-07 located inside Building 14 was not installed. The proposed location for probe 14SG-07 is in an unoccupied area of the building and was not accessible at the time of probe installation; therefore, it was not installed.

- Section 2.1.1 of the SAP (SulTech 2005b) indicated that the soil gas probes would consist of a 0.25-inch diameter brass or stainless steel pipe with a permeable probe tip. All 42 probes installed for this investigation were constructed with polyethylene tubing with a permeable probe tip. Polyethylene tubing is inert and commonly used for soil gas studies and an acceptable material to use when analyzing for VOCs. Section 2.1.1 also indicated that bentonite chips would be used to fill the borehole annular-space around the probe pipe to the base of the concrete foundation. Bentonite powder was used instead of bentonite chips.

- Soil gas samples with high concentrations of VOCs required dilution, as discussed below in Section 3.2. Samples that required dilutions (see Table 3) resulted in reporting limits above the reporting limits presented in Appendix B of the SAP (SulTech 2005b).

- Section 2.2.1 of the SAP indicated three purge volumes would be extracted using a vacuum pump before sampling to ensure stagnant or ambient air is removed before the sampling system (SulTech 2005b). However, a 6-liter Suma canister with -30 millimeters of mercury pressure was used instead of a vacuum pump to extract the three purge volumes.

2.6 TECHNICAL OR REGULATORY STANDARDS

Comparison criteria were used for the preliminary evaluation of potential risks to human health and the environment. Environmental screening levels (ESL) for soil gas from the Cal/EPA Water Board (2005) and California human health screening level (CHHSL) for soil gas from the Cal/EPA DTSC (2005a) were used as the comparison criteria (see Table 4) to assess the soil gas results.

3.0 SOIL GAS SAMPLING RESULTS

This section presents the results of the leak testing conducted during the soil gas sampling, the data quality, and the soil gas results screened against the comparison criteria for the September 2006 sampling event and resampling of Building 163A in March 2007. The soil gas analytical results for September 2006 and March 2007 are provided in Appendix A, and the laboratory reports are provided on the enclosed CD. The soil gas analytical results screened against the comparison criteria for January 2006 sampling event are provided in Appendix B.

3.1 LEAK TESTING RESULTS

Results of leak testing during soil gas sampling are summarized in Table 5. Pure IPA at a concentration of 91 percent (910,000,000 micrograms per liter [μg/L]) was used as the tracer for leak testing. IPA was detected in 78 percent of the soil gas samples collected during the second sampling event (September 2006) at concentrations ranging from 0.001 to 5.6 μg/L. The average IPA concentration detected per building is as follows: 0.32 μg/L (Building 14), 0.63 μg/L (Building 113), 1.1 μg/L (Building 162), 0.30 μg/L (Building 163A), and 0.81 μg/L (Building 398).

3.2 SOIL GAS RESULTS SCREENED AGAINST COMPARISON CRITERIA

The September 2006 and March 2007 analytical results for soil gas were compared with the comparison criteria. The results of the comparison for each building are presented below.

3.2.1 Building 14

Ten soil gas samples were collected in Building 14 during the second sampling event (September 2006). None of the VOCs detected in samples collected from Building 14 exceeded the ESL or CHHSL criteria (see Table 6). The reporting limits for all the VOCs analyzed for were less than the ESL and CHHSL criteria.

3.2.2 Building 113

Four soil gas samples (three samples and one duplicate) were collected in Building 113 during the second sampling event (September 2006). TCE was detected in four of four soil gas samples (three samples and one duplicate) collected in Building 113, and two samples (original and duplicate collected from probe 113SG03) exceeded the CHHSL screening criterion of 1,770 micrograms per cubic meter (µg/m^3) (see Figure 6 and Table 7). The sample that exceeded the screening criterion was collected from probe 013SG-03, and the concentration of TCE detected in this sample was 2,800 µg/m^3 (2,700 µg/m^3 in the duplicate); however, this result did not exceed the ESL criterion of 4,100 µg/m^3 (see Figure 6). The reporting limits for all VOCs analyzed for were less than the ESL and CHHSL criteria.

3.2.3 Building 162

Twenty three soil gas samples (21 samples and two duplicates) were collected in Building 162 during the second sampling event (September 2006). TCE was detected in 22 of 23 soil gas samples collected in Building 162, and 13 samples (12 samples and one duplicate) exceeded the CHHSL screening criterion of 1,770 µg/m^3 and four samples exceeded the ESL screening criterion of 4,100 µg/m^3 (see Table 8). The samples that exceeded the comparison criteria are shown on Figure 6 and are summarized in the table below:

Building 162 Chemicals in Soil Gas that Exceed Screening Criteria

Analyte	Probe Location	Detected Concentration (µg/m^3)	CHHSL Criterion (µg/m^3)	Detected Concentrations Exceed CHHSL Criterion?	ESL Criterion (µg/m^3)	Detected Concentrations Exceed ESL Criterion?
Trichloroethene	162SG-01	3,700	1,770	Yes	4,100	No
Trichloroethene	162SG-03	3,400	1,770	Yes	4,100	No
Trichloroethene	162SG-06	2,800	1,770	Yes	4,100	No
Trichloroethene	162SG-06 (DUP)	2,700	1,770	Yes	4,100	No
Trichloroethene	162SG-07	3,400	1,770	Yes	4,100	No
Trichloroethene	162SG-08	5,500	1,770	Yes	4,100	Yes
Trichloroethene	162SG-09	1,900	1,770	Yes	4,100	No
Trichloroethene	162SG-12	2,500	1,770	Yes	4,100	No
Trichloroethene	162SG-14	12,000	1,770	Yes	4,100	Yes
Trichloroethene	162SG-15	15,000	1,770	Yes	4,100	Yes
Trichloroethene	162SG-16	6,300	1,770	Yes	4,100	Yes
Trichloroethene	162SG-17	2,500	1,770	Yes	4,100	No

Notes:

µg/m^3 Microgram per cubic meter
CHHSL California Human Health Screening Level (DTSC 2005a)
ESL Environmental Screening Level (Water Board 2005)
DUP Duplicate sample collected for quality control

The reporting limits for all VOCs analyzed for were less than the ESL and CHHSL criteria, with the exception of carbon tetrachloride, which had a reporting limit that exceeded the CHHSL (see Table 8).

3.2.4 Building 163A

Two soil samples were collected in Building 163A during the second sampling event (September 2006). TCE was detected in two of two soil gas samples collected in Building 163A, and both samples exceeded the CHHSL criterion of 1,770 $\mu g/m^3$ and one sample exceeded the ESL criterion of 4,100 $\mu g/m^3$ (see Table 9). TCE was detected at 120,000 $\mu g/m^3$ and 3,800 $\mu g/m^3$ in the samples collected from probes 163SG-02 and 163SG-01, respectively (see Figure 7). Cis-1,2-dichloroethene was detected in the sample collected from probe 163SG-02 at 40,000 $\mu g/m^3$ that exceeded the CHHSL (20,000 $\mu g/m^3$) value, but did not exceed the ESL (44,400 $\mu g/m^3$) value. Ten VOCs (1,1,2,2-tetrachloroethane, 1,1,2-TCA, 1,2,4-trichlorobenzene, 1,2-dichloroethane, benzene, bromodichloromethane, carbon tetrachloride, dibromochloromethane, PCE, and vinyl chloride) were not detected in the sample collected from probe 163SG-02; however, the reporting limits exceeded the screening criteria due to the high TCE concentration in this sample, which required a dilution factor of 199.

Because of elevated TCE (120,000 $\mu g/m^3$) and cis-1,2-dichloroethene (40,000 $\mu g/m^3$) concentrations detected in the sample collected from probe 163SG-02 in September 2006, probes 163SG-01 and 163SG-02 were resampled in March of 2007. TCE was detected in three of three samples (two samples and one duplicate) collected in Building 163A in March 2007, all three samples exceeded the CHHSL criterion of 1,770 $\mu g/m^3$ and the ESL criterion of 4,100 $\mu g/m^3$ (see Table 10). TCE was detected at 26,000 $\mu g/m^3$ and 8,000 $\mu g/m^3$ (5,500 $\mu g/m^3$ in duplicate) in samples collected from probes 163SG-02 and 163SG-01, respectively. The reporting limits for six VOCs (1,1,2,2-tetrachloroethane, 1,2-dichloroethane, benzene, bromodichloromethane, carbon tetrachloride, and vinyl chloride) analyzed for during March 2007 sampling event at Building 163A exceeded the ESL and/or CHHSL criteria (see Table 10).

3.2.5 Building 398

Seven soil gas samples (six samples and one duplicate) were collected in Building 398. None of the VOCs detected in samples collected from Building 398 exceeded the ESL or CHHSL criteria (see Table 11). The reporting limits for all the VOCs analyzed for were less than the ESL and CHHSL criteria.

3.3 Utilities Line Assessment

The objective of Step 2 in Table 1 (Are utility corridors a preferential pathway for transport of VOCs vapors into these buildings?) was achieved by installing soil gas probes at the following locations:

- Probe 14SG-11 was installed to assess the sanitary sewer line and fuel lines (see Figure 5).

- Probe 14SG-09 was installed to assess the fuel line (see Figure 5).

- Probe 162SG-02 was installed to assess the sewer line (6-inch diameter) coming up through the slab foundation (not shown on Figure 6); this probe was installed within 3 feet of the sewer line (see Figure 5).

- Probe 162SG-18 was installed to assess electrical lines identified by the utility (not shown on Figure 6) locating subcontractor (see Figure 6).

Utilities lines are not present beneath Buildings 113 and 163A, and the fuel lines shown beneath Building 398 could not be located by the utility locating subcontractor. As a result, soil gas probes were not needed to address Step 2 for Buildings 113, 163A, and 398.

As shown on Figures 5 and 6, VOCs detected in soil gas are not clustered near the utility lines nor are they detected at higher concentrations compared with other probe locations. As a result, the utility lines do not appear to be a preferential pathway of VOCs.

3.4 DATA QUALITY

Although some qualifiers were assigned to the data, a final review of the data set with respect to the EPA data quality parameters indicated that the data are of high overall quality. The data meet all the requirements of the precision, accuracy, representativeness, completeness, and comparability (PARCC) data quality indicators described in EPA guidance for quality assurance project plans (EPA 1997) and are usable for risk assessment. The overall assessment of the sampling program, quality assurance and quality control (QA/QC) data, data review, and data validation results presented in Appendix C indicate that the data for the subslab soil gas investigation are of acceptable PARCC. All supporting documentation is available on request. The database containing all sample results is provided on the enclosed CD.

The EPA "Risk Assessment Guidance for Superfund" (RAGS) was used to evaluate the usability of the validated data (EPA 1989). Exhibit 5-5 in RAGS states that data qualified as estimated (J) based on data validation reports should be used in quantitative risk assessments. Although this guidance is specifically for human health risk assessments, the same usability criteria were applied for all the subslab soil gas investigation data. None of the soil gas data were rejected during the data validation. Only data qualified as rejected (R) were considered unusable for the risk assessment. Accordingly, all J-qualified data, but no R-qualified data (which there were none), were used for the subslab soil gas human health risk assessment.

The laboratory prescreened all soil gas samples with a photoionization detector (PID) before analysis by EPA Method TO-15. Based on the total VOC concentration measured by the PID, all 46 samples collected during the September 2006 sampling event required dilutions (see Table 3), resulting in reporting limits above the reporting limits specified in Table B-1 of the

SAP (SulTech 2005b). Two samples (162SG-15 and 163SG-02) required a dilution factor of 35 and 199, respectively. These two samples required a dilution due to high concentrations of TCE at 15,000 $\mu g/m^3$ and 120,000 $\mu g/m^3$; respectively, resulting in reporting limits that exceeded the screening criteria (see Tables 8 and 9). Carbon tetrachloride was not detected in sample 162SG-15; however, the reporting limit exceeded the CHHSL but did not exceed the ESL (see Table 8). Ten VOCs (1,1,2,2-tetrachloroethane, 1,1,2-TCA, 1,2,4-trichlorobenzene, 1,2-DCA, benzene, bromodichloromethane, carbon tetrachloride, dibromochloromethane, PCE, and vinyl chloride) were not detected in sample 163SG-02; however, the reporting limits exceeded the screening criteria (see Table 9). Six VOCs (1,1,2,2-tetrachloroethane, 1,2-dichloroethane, benzene, bromodichloromethane, carbon tetrachloride, and vinyl chloride) analyzed for during March 2007 resampling event at Building 163A exceeded the ESL and/or CHHSL criteria (see Table 10)

4.0 HUMAN HEALTH RISK ASSESSMENT

This section details the methodology for estimating concentrations and associated cancer risks and noncancer health hazards of chemicals of potential concern (COPC) in indoor air from soil gas by vapor intrusion into occupied buildings at OU-2B. The indoor air pathway was originally evaluated in the RI report using data for groundwater. Based on the RI report, the cancer risk estimate for commercial/industrial workers at OU-2B is 1×10^{-4}, and the noncancer hazard index (HI) is 0.2. This evaluation reevaluates the vapor intrusion pathway using building-specific soil gas data, which is the preferred medium for evaluating the indoor air pathway (DTSC 2005b).

The DTSC 2003 Advanced Vapor Intrusion Model (DTSC 2003) was used to estimate indoor air concentrations from concentrations of volatile COPCs in soil gas. The one-dimensional vapor intrusion model estimates convective and diffusive transport of chemical vapors emanating from subsurface media into indoor spaces located directly above or near the source of contamination. A detailed description of the vapor intrusion model is provided in DTSC's "Guidance for the Evaluation and Migration of Subsurface Vapor Intrusion to Indoor Air" (DTSC 2005b) and EPA's Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (subsurface vapor intrusion guidance) (EPA 2002b).

To evaluate the indoor air migration pathway, DTSC's 2003 Advanced Vapor Intrusion Model was used to estimate the indoor air concentrations from concentrations of volatile COPCs in groundwater and soil (DTSC 2003). The model assumes (1) the chemical concentration in the source (groundwater or soil) is not decreased by transport of the constituent to the surface and (2) the depth to the pollutant source remains constant. The model also ignores attenuating factors, such as biological degradation. For this reason, it is a conservative screening tool to identify maximum indoor air concentrations and risks.

For the purpose of this investigation, volatile chemicals were identified using the definition of volatility (a molecular weight of less than 200 grams per mole and a Henry's Law Constant greater than 1×10^{-5} atmosphere-cubic meter per mole) adopted from EPA (1991, 2004b). Modeling equations and further details pertaining to the vapor intrusion model can be found in the DTSC (2005b) and EPA (1992, 2000b, 2002b) vapor intrusion guidance.

4.1 SELECTION OF CHEMICALS OF POTENTIAL CONCERN

All VOCs detected in soil gas at each occupied building at OU-2B were evaluated for the indoor air vapor intrusion pathway. COPCs included in the human health risk evaluation for each building at OU-2B are presented in Tables 12 through 17.

4.2 VAPOR INTRUSION MODEL

Volatilization of contaminants located in groundwater and soil, and the subsequent mass transport of these vapors into indoor spaces constitutes a potential inhalation exposure pathway evaluated through risk assessment. Johnson and Ettinger (1991) introduced a screening-level model that incorporates both convective and diffusive mechanisms for estimating the transport of contaminant vapors emanating from groundwater or soil into indoor spaces located directly above or in close proximity to the source of contamination. In their article, Johnson and Ettinger reported that the results of the model were in qualitative agreement with published experimental case histories and in good qualitative and quantitative agreement with detailed three-dimensional numerical modeling of radon transport into houses (Loureiro and others 1990).

The vapor intrusion model provides an estimated attenuation coefficient that relates the vapor concentration in the indoor space to the vapor concentration at the source of contamination. The model is constructed as both a steady-state solution to vapor transport (infinite or nondiminishing source) and as a quasi-steady-state solution (finite or diminishing source). Inputs to the model include chemical properties of the contaminant, saturated and unsaturated zone soil properties, structural properties of the building, and appropriate exposure assumptions for those receptors that are being evaluated (EPA 2000b, 2002b).

4.3 INPUT PARAMETERS USED IN SOIL GAS MODELING

Air emissions and transport of volatile COPCs from groundwater or soil to indoor air are based on properties of the contaminant, the saturated and vadose zone soil, and dimensions of buildings or residential structures (EPA 2000b, 2002b). Input parameters used in the human health risk evaluation are discussed in the following subsections and presented in Table 18.

4.3.1 Soil Properties and Soil Characteristics

Site-specific soil data were used for the vapor intrusion evaluation. Soil overlying groundwater at OU-2B consists primarily of sand. This evaluation assumed that the soil stratigraphy is homogeneous from soil surface to groundwater, which is reasonable given the shallow depth (approximately 5 feet) to groundwater.

Migration of constituents through soil depends on their ability to diffuse from the source into the vapor space and through the soil thereafter. Vapor space is a function of the total porosity of the soil and the volume of water displacing the air within the pore volume. Research has shown that the vapor space immediately above free product and dissolved-phase hydrocarbon contamination is typically low because of the capillary fringe effect. For this analysis, the total soil porosity, water-filled soil porosity, and air-filled soil porosity were based on default parameters for "sand" (DTSC 2003). The average soil temperature (16.7 degrees Celsius) is based on the site location and the average subsurface soil and groundwater temperature provided in "Figure A-1: Groundwater Temperature for California" of DTSC's "Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air" (DTSC 2005b). The soil gas sampling depth below grade is based on the average gas sampling probe depth for each building. Input parameters for modeling the vapor intrusion pathway are presented in Table 18.

4.3.2 Building Parameters

The current dimensions of the five buildings at OU-2B were used to estimate exposure point concentrations (EPC) in indoor air. The foundation thickness was based on the average slab thickness for each building.

The vapor intrusion model assumes that the contaminant source is infinite (with respect to modeling time of interest) for soil gas and that vapor infiltration is through cracks in the foundation and below-grade walls, if any (EPA 2000b, 2002b). The area of cracks through which vapors can pass was assumed to be equal to a 0.1 centimeter-wide crack.

The building ventilation rate (also known as exchange rate) is another characteristic used in the vapor intrusion model. The building ventilation rate used in the modeling (1.0 $hour^{-1}$) was adopted from DTSC's "Guidance for the Evaluation and Migration of Substances Vapor Intrusion to Indoor Air" (DTSC 2005b).

Buildings can develop negative pressures relative to ambient pressure as a result of temperature gradients and wind effects. These pressure differences (dP) affect contaminant flux into buildings and are taken into account in the vapor intrusion model. Typical dP values are 10 to 100 grams per centimeter per second squared (g/cm-s^2). The recommended value from DTSC (2005b) and EPA (2002b) of 40 g/cm-s^2 was used for dP in this evaluation because flux is directly proportional to dP.

A soil gas advection rate (referred as Q_{soil} in the model) of 5 liters per minute (L/m) is recommended by EPA (2002b) for small buildings (10 meters by 10 meters). A building-specific soil gas advection rate for the existing buildings was estimated by adjusting the model default of 5 L/m proportionally based on dimension, as recommended by DTSC (DTSC 2005b).

Building parameters used in the indoor air modeling are presented in Table 18.

4.3.3 Soil Gas Concentrations

The 95th percentile upper confidence limit on the arithmetic mean (95 UCL) was calculated and used as the EPC in the risk evaluation to estimate chemical intakes. The 95 UCL is defined as a value that, when calculated repeatedly for randomly drawn subsets of site data, equals or exceeds the true mean 95 percent of the time (EPA 2002c). The 95 UCL is a better predictor of actual chronic exposure conditions than the maximum concentration because it is based on the probability of long-term random contact with contaminated areas. However, the maximum concentration was used as the EPC in areas where the 95 UCL exceeded the maximum chemical concentration. The use of the 95 UCL is warranted for the human health risk evaluation based on the proximity of the samples collected beneath the individual buildings. All statistics were estimated using ProUCL software, Version 3.0 (EPA 2004b).

4.3.4 Vapor Intrusion Modeling Results

The EPCs calculated from the soil gas results (as described in Section 4.3.3) were used to estimate the indoor air concentrations of volatile COPCs in each building using DTSCs' version of the Johnson and Ettinger model (DTSC 2003). The vapor intrusion modeling results are summarized in Tables 19 and 20 for September 2006 and March 2007 sampling events, respectively.

4.4 CALCULATION OF RISK ESTIMATES

The method used to evaluate the risk from inhalation of indoor air is based on the risk assessment framework developed by EPA and DTSC, as documented in "Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A)" (EPA 1989) and "Supplemental Guidance for Human Health Multimedia Risk Assessments of Hazardous Waste Sites and Permitted Facilities" (DTSC 1992). The EPA-derived exposure algorithm was used to estimate the chemical intakes for the inhalation pathway. The equation used for calculating chemical intake is as follows:

$$I = \frac{C \times IR \times EF \times ED}{BW \times AT} \tag{1}$$

where:

I	=	Intake (in milligrams per kilogram per day [mg/kg-day])
C	=	Indoor air concentration (in milligrams per cubic meter [mg/m^3])
IR	=	Inhalation rate (m^3/day)
EF	=	Exposure frequency (days/year)
ED	=	Exposure duration (years)
BW	=	Body weight (kilograms)
AT	=	Averaging time (days)

The exposure parameter values used in the intake equation above are based on factors for the commercial/industrial worker:

- **Inhalation Rate:** The inhalation rate used to estimate an inhaled dose or intake for a given chemical depends on the activity level of the potential receptor. An inhalation rate of 14 cubic meters per 8-hour commercial work day (m^3/day) was used (DTSC 2005c).

- **Exposure Frequency:** The exposure frequency of 250 days per year (EPA 1991; DTSC 1992) was assumed to correspond to the number of work days in a year.

- **Exposure Duration:** The exposure duration of 25 years was used for the commercial/industrial worker (EPA 1991; DTSC 1992).

- **Body Weight:** Consistent with EPA and DTSC guidance (EPA 1991; DTSC 1992), a default body weight of 70 kilograms was used for an adult.

- **Averaging Time:** The averaging time for addressing adverse noncancer health effects is equal to the exposure duration (in years) times 365 days per year, as recommended by EPA (EPA 1989). The averaging time for cancer risk estimation is the number of days in a 70-year lifetime or 25,550 days, as recommended by EPA (EPA 1989). This cancer risk averaging time is used to remain consistent with the basis for slope factors (SF).

For carcinogens, the intakes were multiplied by chemical-specific inhalation SFs to estimate a chemical-specific cancer risk. For noncarcinogens, the intakes were divided by chemical-specific inhalation reference doses (RF) to estimate a noncancer hazard quotient (HQ). The cumulative cancer risk and noncancer HI were then calculated by summing the individual cancer risks or noncancer HQs.

Toxicity values (SFs and RFs) were chosen based on selection criteria from EPA guidance (EPA 2003). The inhalation SF for TCE used to calculate cancer risk in this risk assessment is a subject of ongoing discussion. Toxicity values are not currently available for TCE in EPA's Integrated Risk Information System (EPA 2006). EPA withdrew its previously published toxicity values for TCE in 1988 because of uncertainties relating to the science of TCE toxicity. Thus, cancer risk for TCE was estimated using an inhalation SF of 0.4 milligrams per kilogram per day $(mg/kg\text{-}day)^{-1}$ from the EPA National Center of Environmental Assessment (NCEA) (EPA 2001), which is a Tier 3 source of toxicity criteria in EPA guidance on selecting a toxicity factor for Superfund risk assessments (EPA 2003). A more current inhalation factor of 0.007 $(mg/kg\text{-}day)^{-1}$ is available from another Tier 3 source of toxicity criteria, the Office of Environmental Health Hazard Assessment (OEHHA 2006). As a conservative estimate, the NCEA SF of 0.4 $(mg/kg\text{-}day)^{-1}$ was used.

4.5 RISK EVALUATION RESULTS

Potential risks associated with exposure to chemicals detected at OU-2B were evaluated for commercial/industrial receptors using the second sampling event (September 2006) results for Buildings 14, 113, 162, 163A, and 398. In addition, the risk was evaluated using the resampling event (March 2007) results for Building 163A. The risk estimates for the five buildings are discussed below, and are presented in Tables 19 and 20 for the September 2006 and March 2007 sampling events, respectively. The risk estimates for the five buildings for the January 2006 sampling event are provided in Section 5.0.

4.5.1 Building 14

The potential cancer risk estimate for the commercial/industrial worker at Building 14 is 7×10^{-7}, which is below the lower end of the EPA risk management range of 10^{-6} to 10^{-4}, and the noncancer HI is 0.02.

4.5.2 Building 113

The potential cancer risk estimate for the commercial/industrial worker at Building 113 is 2×10^{-5}, within the EPA risk management range of 10^{-6} to 10^{-4}, and the noncancer HI is 0.01. TCE is the primary contributor to the cancer risk, contributing 99 percent to the cumulative cancer risk and is the only cancer risk driver identified at Building 113. No noncancer risk drivers (COPCs that exceed a noncancer quotient of 1) were identified at Building 113.

4.5.3 Building 162

The potential cancer risk estimate for the commercial/industrial worker at Building 162 is 5×10^{-5}, within the EPA risk management range of 10^{-6} to 10^{-4}, and the noncancer HI is 0.04. TCE is the primary contributor to the cancer risk, contributing more than 99 percent to the cumulative cancer risk and is the only cancer risk driver identified at Building 162. No noncancer risk drivers were identified at Building 162.

4.5.4 Building 163A

The potential cancer risk estimate for the commercial/industrial worker at Building 163A is 8×10^{-4} using the second sampling event results, which is outside the EPA risk management range of 10^{-6} to 10^{-4}; and the noncancer HI is 0.8. The potential cancer risk estimated using the sampling results from the resampling event (March 2007) at Building 163A is 2×10^{-4}, which is also outside the EPA risk management range of 10^{-6} to 10^{-4}; and the noncancer HI is 0.2. TCE is the primary contributor to the cancer risk, contributing more than 99 percent to the cumulative cancer risk and is the only cancer risk driver identified at Building 163A. No noncancer risk drivers were identified at Building 163A.

The potential cancer risk may be overestimated due to the uncertainty of the TCE inhalation SF. Applying the OEHHA inhalation SF instead of the NCEA inhalation SF results in potential cancer risk estimates of 1×10^{-5} for the September 2006 sampling event and 3×10^{-6} for the March 2007 resampling event. Use of the OEHHA inhalation SF for TCE results in the potential cancer risk estimates to be within the EPA risk management range.

4.5.5 Building 398

The potential cancer risk estimate for the commercial/industrial worker at Building 398 is 9×10^{-6}, within the EPA risk management range of 10^{-6} to 10^{-4}, and the noncancer HI is 0.007. TCE is the primary contributor to the cancer risk, contributing 99 percent to the cumulative cancer risk and is the only cancer risk driver identified at Building 398. No noncancer risk drivers were identified at Building 398.

4.6 UNCERTAINTY ANALYSIS

This section presents the uncertainties associated with calculating risks using infinite indoor air concentrations with the vapor intrusion model and uncertainty associated with the toxicity values used. The cumulative effect of the uncertainties described below results in an overestimate of risk to human health from vapor intrusion into indoor air.

The assumption of steady-state exposure concentrations over long-term exposure durations (e.g., 25 years for workers) results in uncertainty in risk assessment. To be conservative, the soil gas concentrations are assumed to be constant for the duration of exposure and thereby do not consider the natural physical, chemical, or biological processes which reduce chemical concentrations over time.

Over time, concentrations can decrease, as chemicals move from one medium to another and from location to location within a particular medium. In addition, the overall available mass of a chemical may decrease as the chemical is lost through transformation or degradation processes, such as hydrolysis, photolysis, and biodegradation. Thus, the concentrations to which the receptors would be exposed also decrease over time. Using only the measured concentration of the chemical in a particular medium to calculate potential risks is highly conservative and overestimates risk. Evans and Bedient (1995) determined that the use of steady-state methods may over-predict risk by as much as two orders of magnitude. In addition, concentrations of certain chemicals may increase during transformation or degradation processes. For example, concentrations of vinyl chloride may initially increase during dechlorination of chlorinated solvents. However, vinyl chloride may be further dechlorinated to ethylene or ethane, thereby reducing concentrations of vinyl chloride.

The assumption that buildings are continuously under-negative pressure neglects significant periods where neutral or positive pressurized conditions exist, thereby overestimating advective transport of contaminated vapors to indoor air, and yields higher indoor air concentrations.

The assumption of vapor transport under a single (vertical) dimension ignores the potential for vapor migration in multiple directions away from the source area, resulting in an overestimation of vapor emissions and higher indoor concentrations.

The results of the leak testing indicate that leakage occurred during sampling at some locations; therefore, there was the potential for dilution for samples collected from probes inside Buildings

14, 113, 163, and 398. Isopropyl alcohol (the leak testing compound) was not detected in any of the samples collected from the probes inside Building 163A.

The exposure variables used to estimate chemical intake are standard upperbound estimates. For instance, the commercial/industrial worker is assumed to work within the same building for 25 years, based on the 95th percentile of workers (Bureau of Labor Statistics 1990). Collectively, defaults are expected to error on the conservative side. Given that the exposure variables used to estimate chemical intake are agency-supported, upperbound estimates, human health risks are likely overestimated.

Uncertainties associated with the toxicity assessment are related to deriving toxicity values for COPCs. Standard RfDs and SFs used to estimate potential cancer and noncancer health effects from exposure to COPCs at the site are derived by applying conservative (health-protective) assumptions and are intended to protect the most sensitive potentially exposed individuals.

Several assumptions were made when deriving the toxicity values that tend to overestimate the actual hazard or risk to human health. Because data from human studies are generally unavailable, the RfDs are typically derived from animal studies. Uncertainty factors and modifying factors are then applied to the data from animal studies to ensure that the RfDs are adequately protective of human health. For many compounds, this approach is anticipated to result in an overestimated potential for noncancer adverse health effects.

Deriving SFs used to estimate cancer risk is also typically based on data from animal studies. These data are taken from studies in which high doses of a test chemical were administered to laboratory animals, and the reported response is extrapolated to the much lower doses to which humans are likely to be subjected. Few experimental data are available on the nature of the dose-response relationship at low doses (for example, a threshold may exist or the dose-response curve may pass through the origin). Because of this uncertainty, a conservative model was selected to estimate the low-dose relationship, and an upperbound estimate was used (typically a 95 percent UCL of the slope predicted by the extrapolation model) as the SF. With this SF, an upperbound estimate of potential cancer risks is obtained that likely overestimates risks.

A second uncertainty associated with toxicity values is the unavailability of RfDs or SFs for all COPCs at a site. The cancer risks and noncancer health hazards can be assessed only for those COPCs for which the relevant toxicity values are available. For COPCs for which a SF or an RfD was available for only one route of exposure, route-to-route extrapolations were made. These extrapolations will introduce some uncertainty into the risk and hazard estimates.

Uncertainty specific to the TCE toxicity criteria is significant because TCE is the primary risk driver for many of the evaluated buildings. As discussed in Section 4.4, the EPA withdrew its previously published toxicity values for TCE in 1988. EPA has not published finalized toxicity values for TCE since withdrawing the original values because of uncertainties relating to the science of TCE toxicity. An inhalation SF from NCEA was selected as a conservative estimate over a more current inhalation factor from OEHHA, despite both being Tier 3 toxicity criteria. The NCEA value of 0.4 $(mg/kg\text{-}day)^{-1}$ is a factor of greater than 50 higher than the OEHHA value 0.007 $(mg/kg\text{-}day)^{-1}$ and significantly impacts the risk results as detailed in Section 4.5.4.

5.0 SUMMARY

Subslab soil gas samples were collected from probes installed directly beneath the concrete slab-on-grade floors of Buildings 14, 113, 162, 163A, and 398. Soil gas samples were collected from probes in September 2006 and analyzed for VOCs by EPA Method TO-15. The probes in Building 163A were also sampled in March 2007 and analyzed for VOCs by EPA Method TO-15. The results of this investigation along with information from other ongoing investigations will be used in the upcoming feasibility study.

A human health risk assessment was conducted using vapor intrusion modeling to model soil gas concentrations into indoor air and to assess cancer risk and noncancer hazard from inhalation of vapors in indoor air for the commercial/industrial worker. The results of the human health risk assessment for the September 2006 and March 2007 sampling events are summarized below.

Building Identification	Cancer Risk	Noncancer Hazard Index
Building 14	7×10^{-7}	0.02
Building 113	2×10^{-5}	0.01
Building 162	5×10^{-5}	0.04
Building 163A	8×10^{-4} (2×10^{-4})*	0.8 (0.2)*
Building 398	9×10^{-6}	0.007

Note:

* Result shown in parenthesis is for March 2007 resampling event at Building 163A.

The cancer risks estimated for the commercial/industrial work for all five buildings were within the EPA risk management range of 10^{-6} to 10^{-4}, with the exception of Building 163A which has a cancer risk estimated at 8×10^{-4}. Noncancer health hazards for the commercial/industrial worker were below the EPA HI benchmark of 1 for all five buildings. TCE was identified as the only cancer risk driver for all five buildings and no noncancer risk drivers were identified for any of the five buildings.

The results of the human health risk assessment for January 2006, September 2006 and March 2007 sampling events are summarized below.

Building Identification	January 2006 HHRA Results		September 2006 HHRA Result	
	Cancer Risk	Noncancer Hazard Index	Cancer Risk	Noncancer Hazard Index
Building 14	1×10^{-6}	0.02	7×10^{-7}	0.02
Building 113	6×10^{-6}	0.03	2×10^{-5}	0.01
Building 162	5×10^{-5}	0.05	5×10^{-5}	0.04
Building 163A	7×10^{-5}	0.08	8×10^{-4} (2×10^{-4})*	0.8 (0.2)*
Building 398	2×10^{-5}	0.08	9×10^{-6}	0.007

Notes:

* Result shown in parenthesis is for March 2007 resampling event at Building 163A.

HHRA Human Health Risk Assessment

Comparing the HHRA results for January and September 2006, the estimated risk for both sampling events was very similar for all five building except for Buildings 163A. TCE detected in the sample collected at probe 163SG-02 at 120,000 $\mu g/m^3$ in September 2006, is the only chemical contributing to the cumulative cancer risk at Building 163A. The two soil gas probes in Building 163A were resampled in March 2007 to verify the September 2006 sampling results. TCE detected in the samples collected at probes 163SG-02 (8,000 $\mu g/m^3$ [5,500 $\mu g/m^3$ duplicate]) and 163SG-01 (26,000 $\mu g/m^3$) in March 2007, contributed to more than 99 percent of the cumulative cancer risk at Building 163A.

Risk results were calculated using an inhalation SF for TCE from NCEA. Applying the OEHHA inhalation SF instead of the NCEA inhalation SF results in potential cancer risk estimates of 1×10^{-5} for the September 2006 sampling event and 3×10^{-6} for the March 2007 resampling event. Use of the OEHHA inhalation SF for TCE results in the potential cancer risk estimates to be within the EPA risk management range.

6.0 RECOMMENDATIONS

Based on the results of the January 2006, September 2006, and March 2007 sampling events, the Navy recommends the following:

- No further action associated with this work scope of subslab soil gas sampling for Buildings 14, 113, 162, and 398.
- Resampling of sample probes 163SG-01 and 163SG-02 located inside Building 163A to verify the downward trend of TCE concentration observed between the September 2006 and March 2007 sampling events.

Based on the recommendations, additional sampling will be conducted as part of other ongoing projects at this site.

7.0 REFERENCES

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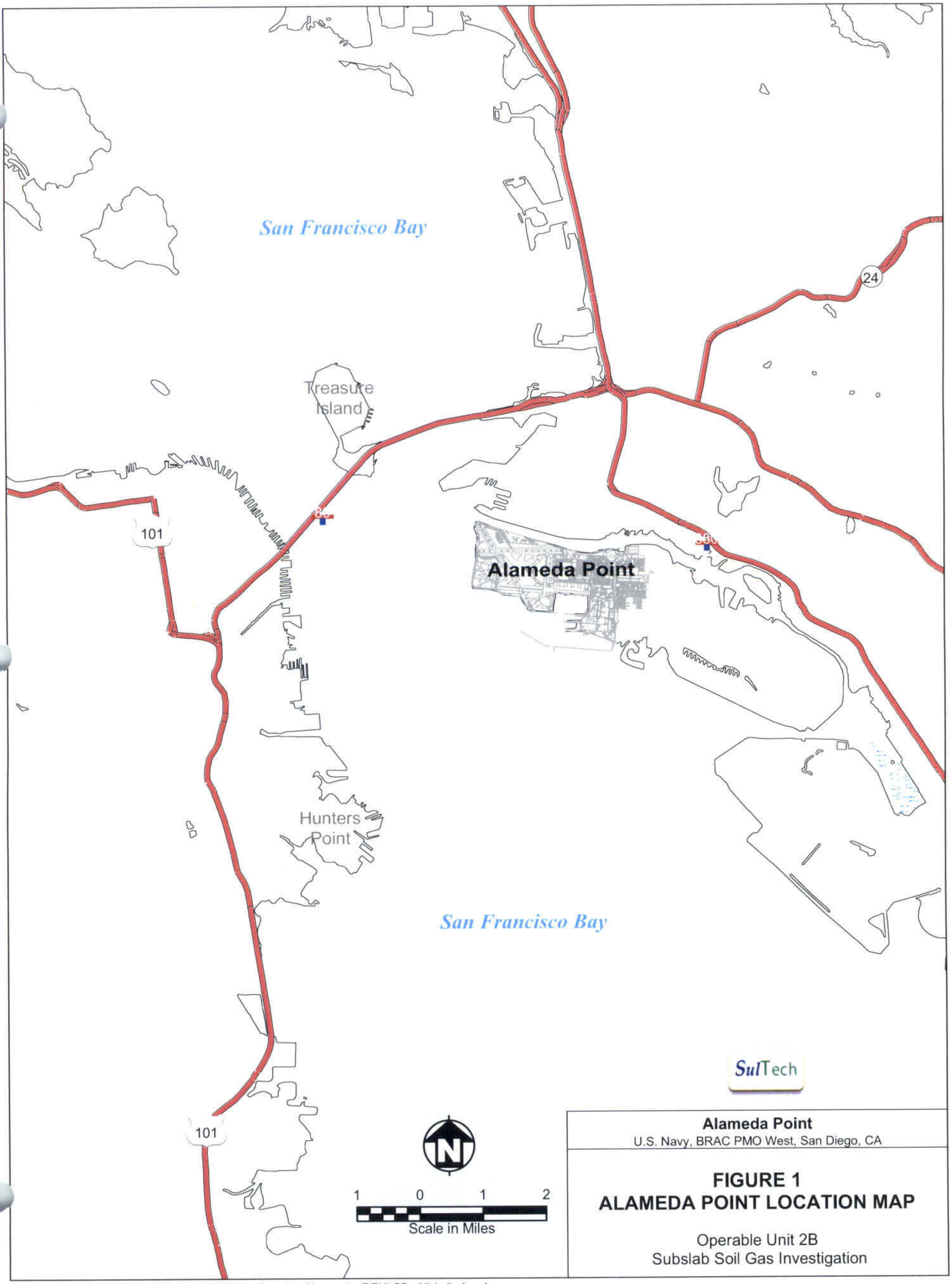
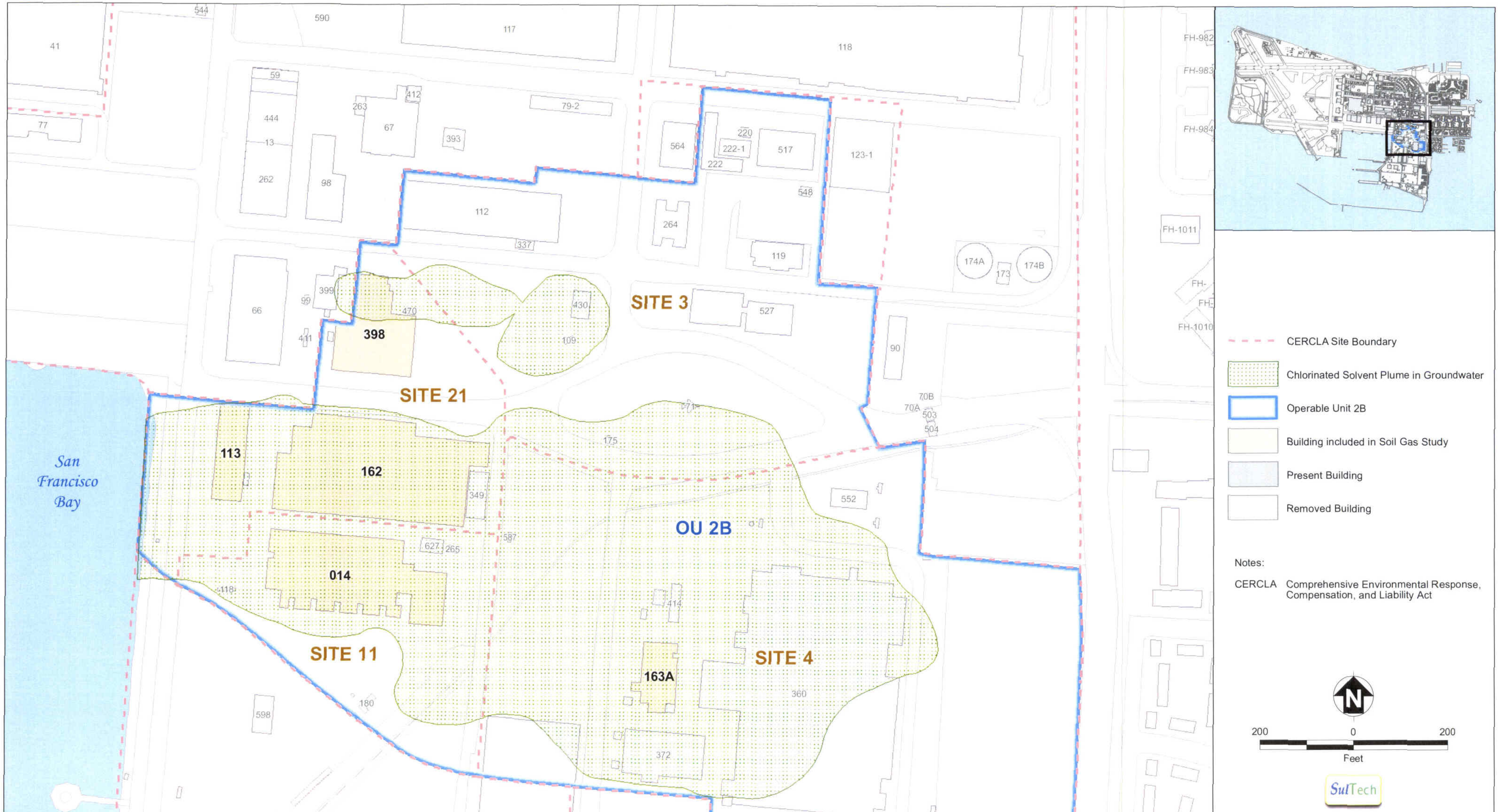
FIGURES



Alameda Point
U.S. Navy, BRAC PMO West, San Diego, CA

FIGURE 1
ALAMEDA POINT LOCATION MAP

Operable Unit 2B
Subslab Soil Gas Investigation



Alameda Point
U.S Navy, BRAC PMO West, San Diego, CA

FIGURE 2
CHLORINATED SOLVENT PLUME IN GROUNDWATER
Operable Unit 2B
Subslab Soil Gas Investigation

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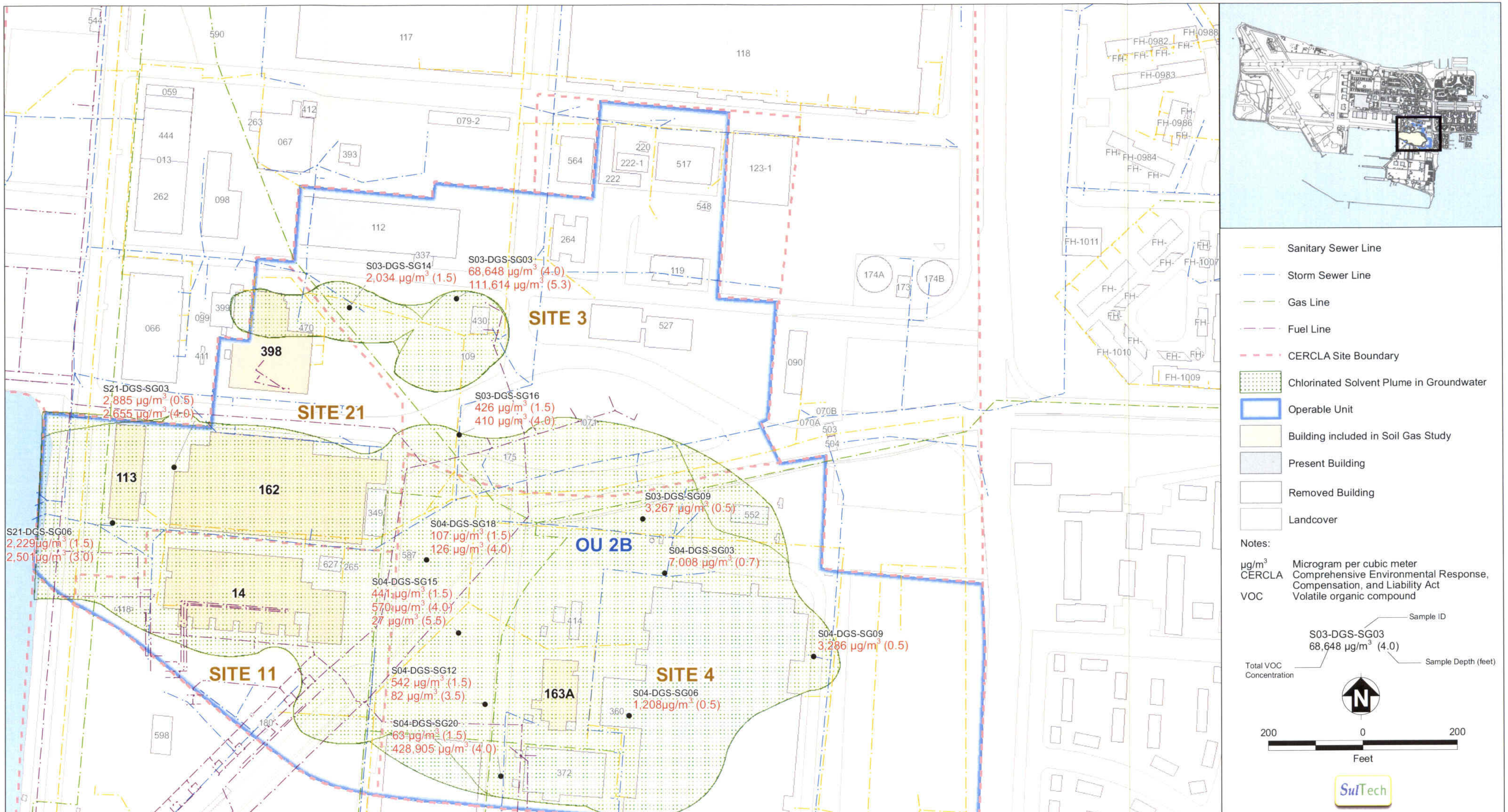

Alameda Point
U.S Navy, BRAC PMO West, San Diego, CA

FIGURE 3
TOTAL VOC CONCENTRATIONS IN SOIL GAS
Operable Unit 2B
Subslab Soil Gas Investigation

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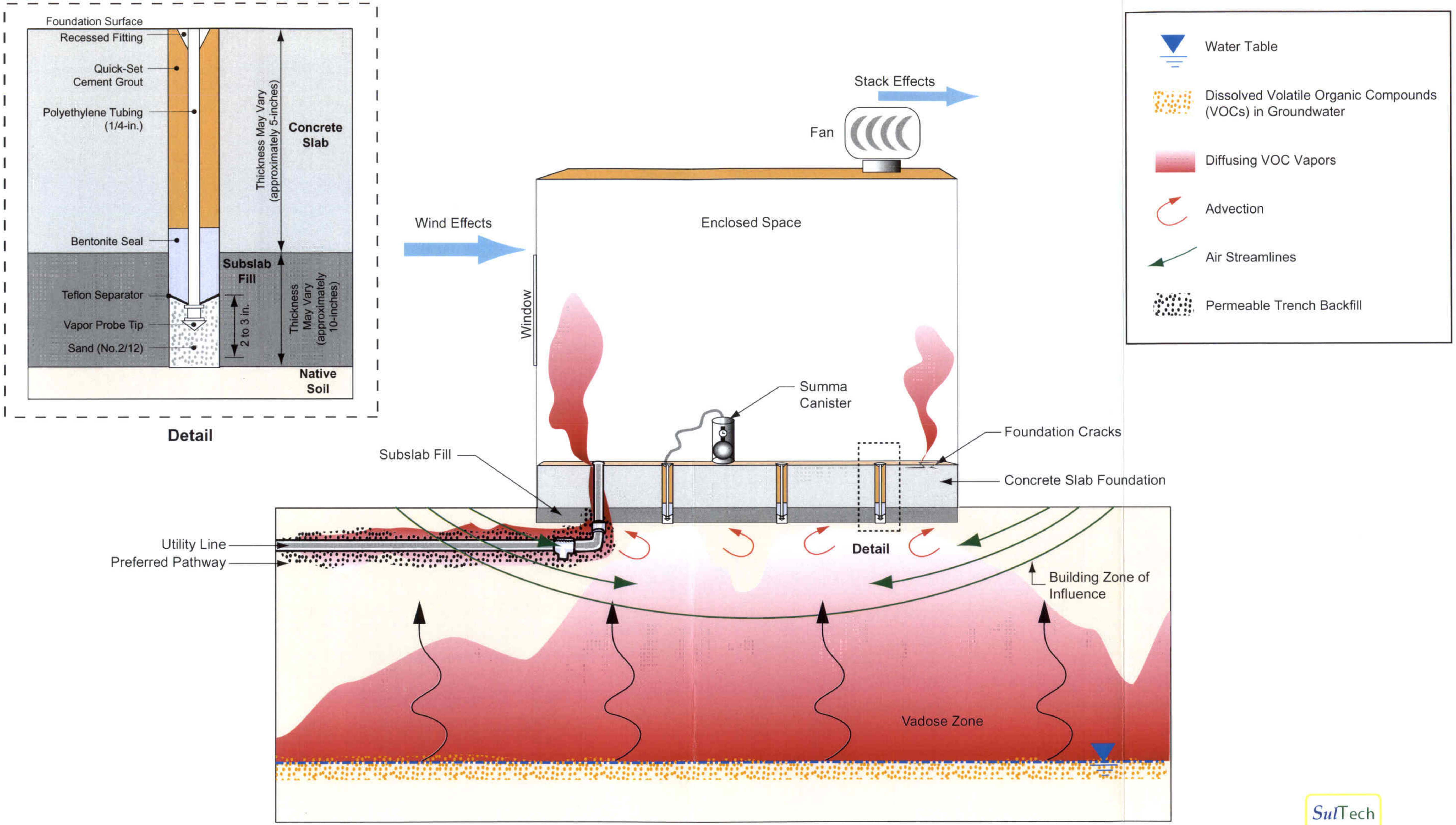

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Alameda Point
U.S. Navy, BRAC PMO West, San Diego, CA

FIGURE 4
CONCEPTUAL VAPOR PATHWAY MODEL

Operable Unit 2B Subslab Soil Gas Investigation

Alameda Point
U.S Navy, BRAC PMO West, San Diego, CA

FIGURE 5
SOIL GAS RESULTS
BUILDING 14

Operable Unit 2B
Subslab Soil Gas Investigation

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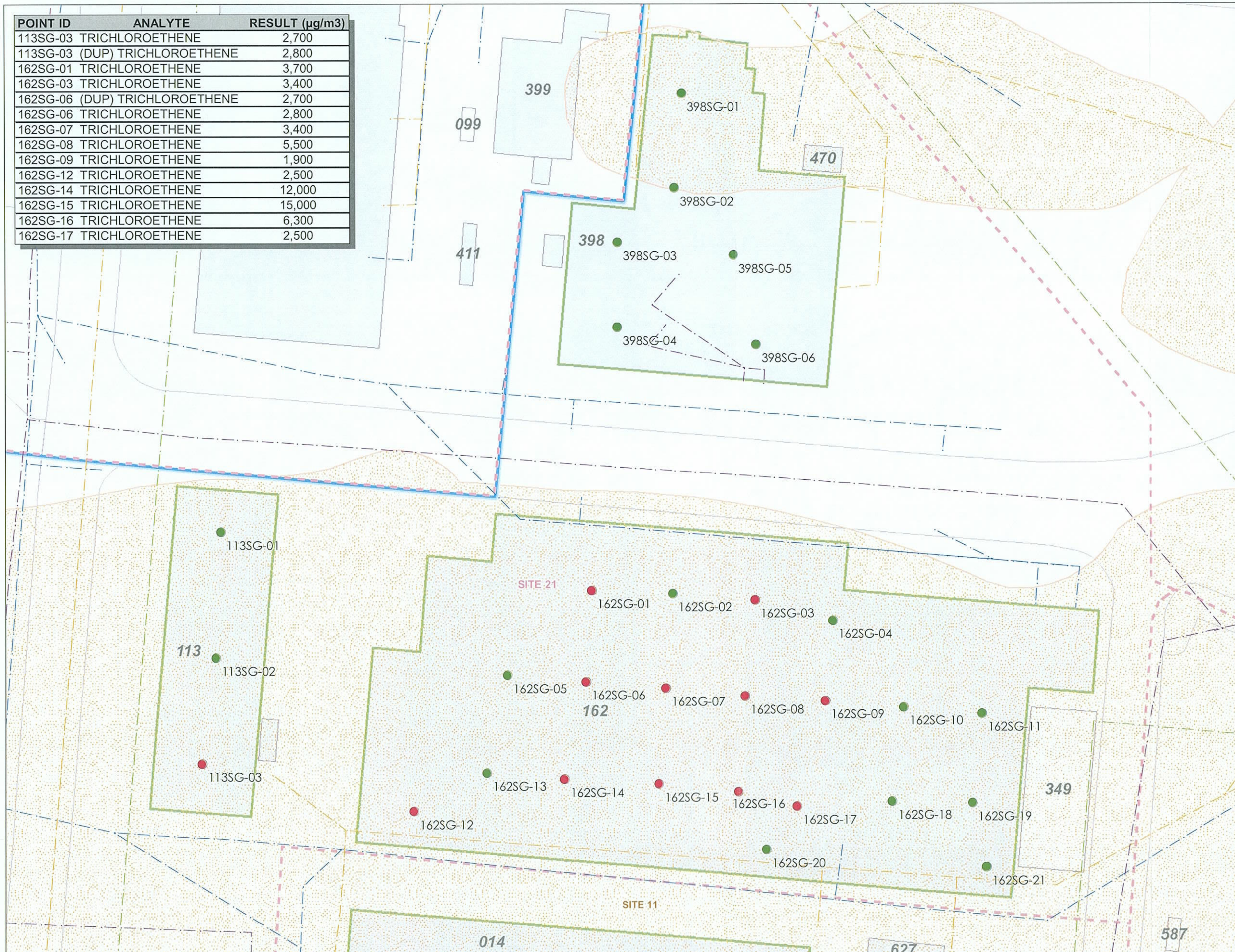
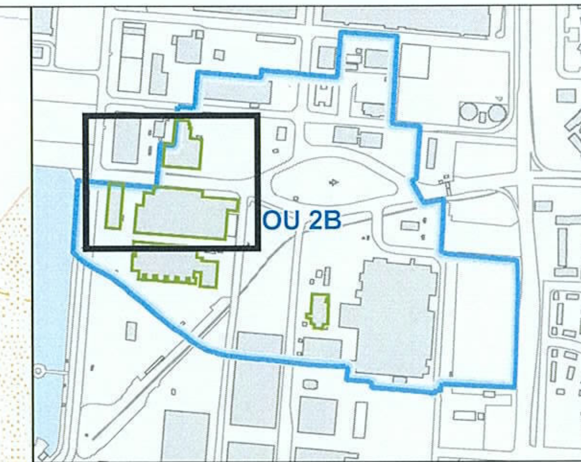


POINT ID	ANALYTE	RESULT (µg/m3)
113SG-03	TRICHLOROETHENE	2,700
113SG-03	(DUP) TRICHLOROETHENE	2,800
162SG-01	TRICHLOROETHENE	3,700
162SG-03	TRICHLOROETHENE	3,400
162SG-06	(DUP) TRICHLOROETHENE	2,700
162SG-06	TRICHLOROETHENE	2,800
162SG-07	TRICHLOROETHENE	3,400
162SG-08	TRICHLOROETHENE	5,500
162SG-09	TRICHLOROETHENE	1,900
162SG-12	TRICHLOROETHENE	2,500
162SG-14	TRICHLOROETHENE	12,000
162SG-15	TRICHLOROETHENE	15,000
162SG-16	TRICHLOROETHENE	6,300
162SG-17	TRICHLOROETHENE	2,500



September 2006 VOC Soil Gas Results

- Detected Result Exceeding CHHSL or ESL
- Result Below Both CHHSL and ESL or Not Detected
- Sanitary Sewer Line
- Storm Sewer Line
- Gas Line
- Fuel Line
- CERCLA Site Boundary
- Operable Unit 2B
- Existing Building
- Removed Building
- Chlorinated Solvent Plume in Groundwater
- Building included in Soil Gas Study

Notes:

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CHHSL	California Human Health Screening Level (DTSC 2005a)
ESL	Environmental Screening Level (Water Board 2005)
VOC	Volatile Organic Chemical

Screening Criteria:

Trichloroethene ESL = 4,100 µg/m^3
Trichloroethene CHHSL = 1,770 µg/m^3

N

60 0 60
Feet

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Alameda Point
U.S Navy, BRAC PMO West, San Diego, CA

FIGURE 6
SOIL GAS RESULTS BUILDINGS 113, 162, AND 398

Operable Unit 2B
Subslab Soil Gas Investigation

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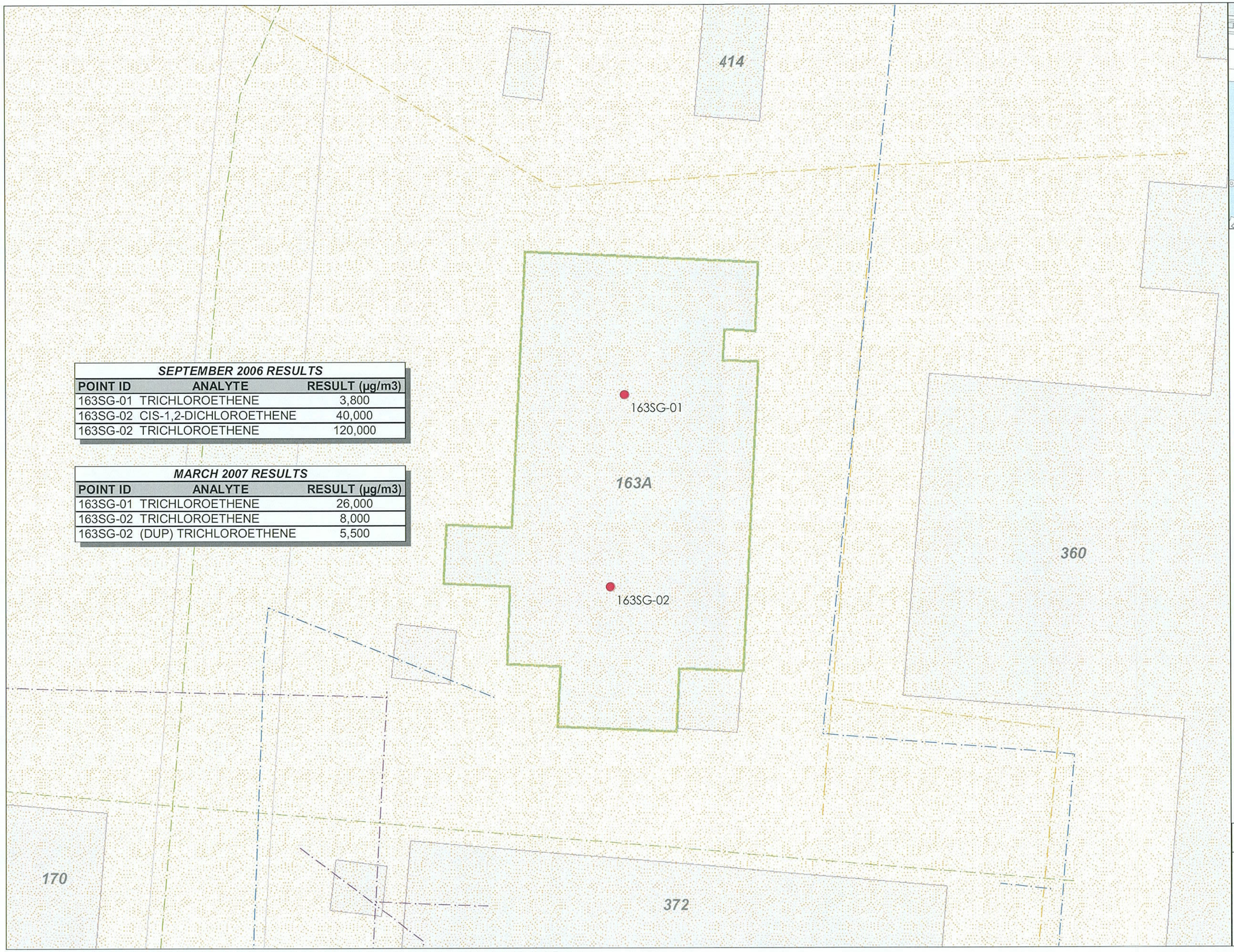
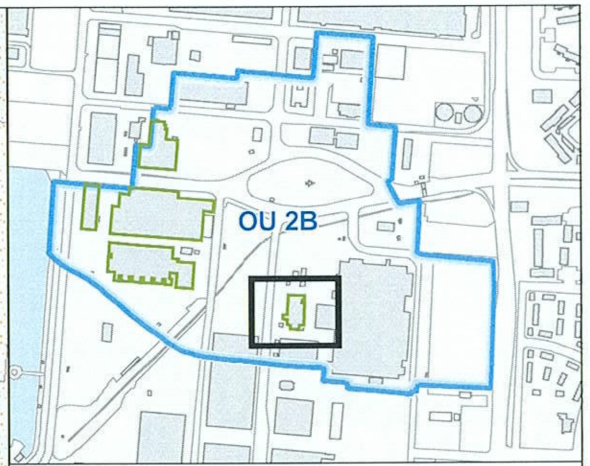


SEPTEMBER 2006 RESULTS

POINT ID	ANALYTE	RESULT (µg/m3)
163SG-01	TRICHLOROETHENE	3,800
163SG-02	CIS-1,2-DICHLOROETHENE	40,000
163SG-02	TRICHLOROETHENE	120,000

MARCH 2007 RESULTS

POINT ID	ANALYTE	RESULT (µg/m3)
163SG-01	TRICHLOROETHENE	26,000
163SG-02	TRICHLOROETHENE	8,000
163SG-02	(DUP) TRICHLOROETHENE	5,500



September 2006 VOC Soil Gas Results

- Detected Result Exceeding CHHSL or ESL
- Result Below Both CHHSL and ESL or Not Detected
- Sanitary Sewer Line
- Storm Sewer Line
- Gas Line
- Fuel Line
- Operable Unit 2B
- Existing Building
- Chlorinated Solvent Plume in Groundwater
- Building included in Soil Gas Study

Notes:
CHHSL California Human Health Screening Level (DTSC 2005a)
ESL Environmental Screening Level (Water Board 2005)
VOC Volatile Organic Chemical

Screening Criteria:
cis-1,2-Dichloroethene ESL = 20,000 µg/m^3
cis-1,2-Dichloroethene CHHSL = 44,400 µg/m^3
Trichloroethene ESL = 4,100 µg/m^3
Trichloroethene CHHSL = 1,770 µg/m^3

N

30 0 30
Feet

SulTech

Alameda Point
U.S Navy, BRAC PMO West, San Diego, CA

FIGURE 7
SOIL GAS RESULTS
BUILDING 163A

Operable Unit 2B
Subslab Soil Gas Investigation

TABLES

TABLE 1: DATA QUALITY OBJECTIVES

Technical Memorandum, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398
Alameda Point, Alameda, California

Step1: State the Problem

VOCs are present in soil and groundwater beneath Buildings 14, 113, 162,163A, and 398. Additional data are desired to evaluate whether VOCs in the subsurface are migrating upward through the soil, entering into buildings, and causing an unacceptable chemical exposure for building occupants.

Step 2: Identify the Decisions

1. Are VOCs in soil gas below Buildings 14, 113,162, 163A, and 398 present at concentrations above the comparison criteria (Table 4)?
2. Are utility corridors a preferential pathway for transport of VOCs vapors into these buildings?

Step 3: Identify Inputs to the Decisions

- Risk-based screening criteria that have been accepted by all stakeholders
- Results from previous investigations
- Analytical results for VOCs in soil gas collected at the site
- Risk assessment results of the Operable Unit 2B remedial investigation
- Water Board's soil gas environmental screening levels for commercial/industrial land use (Water Board 2005)
- Cal/EPA's soil gas California human health screening levels (CHHSL) for shallow soil for commercial/industrial land use (DTSC 2005a)
- Validated, defensible analytical data for VOCs in soil gas from this investigation

Step 4: Define Study Boundaries

The specific samples to be collected define the analytical study boundary and are set forth in the sampling and analysis plan (SulTech 2005b). If concentrations of VOCs are detected above the screening levels established for this investigation, then further evaluation may be necessary to make site decisions.

The temporal boundary is defined by the time to complete the soil gas.

Step 5: Develop Decision Rules

1a. If VOCs are detected at concentrations above the comparison criteria (Table 4) in soil gas samples collected from below Buildings 14, 113, 162, 163A, and 398, then further study will be required to evaluate risk to building occupants.

1b. If VOCs are nondetect or are detected below the comparison criteria (Table 4) in soil gas samples collected from below Buildings 14, 113, 162, 163A, and 398, then further study may not be required.

2a. If VOCs are detected above the comparison criteria (Table 4) in soil gas samples collected at utility line corridors, then soil vapor along utility lines will be considered a possible preferential pathway for VOCs and may require further study.

2b. If VOCs are nondetected or are detected below the comparison criteria (Table 4) in soil gas samples collected at utility line corridors, then soil vapor along utility lines will not be considered a possible preferential pathway for VOCs into the building, and no further action on the utility lines will be required.

TABLE 1: DATA QUALITY OBJECTIVES (CONTINUED)
Technical Memorandum, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398
Alameda Point, Alameda, California

Step 6: Specify Tolerable limits on Decision Errors
Site-specific sampling objectives and media investigated limit the use of statistical methods in selecting sampling locations for this investigation. Sampling locations will be judgmentally based to obtain representative coverage of areas and buildings of particular concern. Tolerable limits on decision errors cannot be precisely defined.
Step 7: Optimize the Sampling Design
Step 7 of the data quality objective process involves optimization of the sampling or experimental design based on current information. As this investigation entails a biased sampling approach, the number of samples, the locations, and the media to be sampled are based on the site history, previous investigations, the overall objectives associated with the data to be collected, and the resource and schedule constraints for this investigation.

Notes:

DTSC Department of Toxic Substances Control
VOC Volatile organic compound
Water Board San Francisco Bay Regional Water Quality Control Board

TABLE 2: SUMMARY OF SOIL GAS PROBE INSTALLATIONS

Technical Memorandum, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398
Alameda Point, Alameda, California

Probe Identification	Slab Thickness (Inches)	Probe Total Depth (Inches)	Date Installed
Building 14			
14SG-01	14	18	18 Jan 2006
14SG-02	9	13	18 Jan 2006
14SG-03	10	15	18 Jan 2006
14SG-04	12	16	18 Jan 2006
14SG-05	8	13	18 Jan 2006
14SG-06	11	15	18 Jan 2006
14SG-08	12	17	18 Jan 2006
14SG-09	4	9	18 Jan 2006
14SG-10	6	11	18 Jan 2006
14SG-11	6	11	18 Jan 2006
Building 113			
113SG-01	7	12	19 Jan 2006
113SG-02	8	12	19 Jan 2006
113SG-03	8	13	19 Jan 2006
Building 162			
162SG-01	6	12	19 Jan 2006
162SG-02	8	14	19 Jan 2006
162SG-03	9	14	19 Jan 2006
162SG-04	7	12	19 Jan 2006
162SG-05	7	12	19 Jan 2006
162SG-06	7	12	19 Jan 2006
162SG-07	7	12	19 Jan 2006
162SG-08	7	12	19 Jan 2006
162SG-09	7	12	19 Jan 2006
162SG-10	9	15	19 Jan 2006
162SG-11	8	12	19 Jan 2006
162SG-12	8	12	19 Jan 2006
162SG-13	23	28	19 Jan 2006
162SG-14	8	13	19 Jan 2006
162SG-15	7	11	19 Jan 2006
162SG-16	6	12	19 Jan 2006
162SG-17	7	12	20 Jan 2006
162SG-18	7	12	20 Jan 2006
162SG-19	7	12	20 Jan 2006
162SG-20	9	15	20 Jan 2006
162SG-21	8	13	20 Jan 2006

TABLE 2: SUMMARY OF SOIL GAS PROBE INSTALLATIONS (CONTINUED)
Technical Memorandum, Subslab Soil Gas Investigation at Buildings 14, 113, 162, 163A, and 398
Alameda Point, Alameda, California

Probe Identification	Slab Thickness (Inches)	Probe Total Depth (Inches)	Date Installed
Building 163A			
163SG-01	6	11	19 Jan 2006
163SG-02	6	11	19 Jan 2006
Building 398			
398SG-01	10	14	20 Jan 2006
398SG-02	10	15	20 Jan 2006
398SG-03	5	10	20 Jan 2006
398SG-04	6	11	20 Jan 2006
398SG-05	4	9	20 Jan 2006
398SG-06	6	10	20 Jan 2006

TABLE 3: SUMMARY OF SAMPLE DILUTIONS
Technical Memorandum, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398
Alameda Point, Alameda, California

Probe Identification	Sample Required Dilution?	Dilution Factor
14SG01	Yes	3
14SG02	Yes	2
14SG03	Yes	5
14SG04	Yes	2
14SG05	Yes	2
14SG06	Yes	2
14SG08	Yes	2
14SG09	Yes	2
14SG010	Yes	2
14SG011	Yes	2
113SG01	Yes	2
113SG02	Yes	2
113SG03	Yes	3
113SG03 (Dup)	Yes	3
162SG01	Yes	8
162SG02	Yes	2
162SG03	Yes	6
162SG04	Yes	2
162SG05	Yes	2
162SG06	Yes	4
162SG06 (Dup)	Yes	4
162SG07	Yes	4
162SG08	Yes	8
162SG09	Yes	2
162SG09 (Dup)	Yes	2
162SG10	Yes	2
162SG11	Yes	2
162SG12	Yes	4
162SG13	Yes	2
162SG14	Yes	20
162SG15	Yes	35
162SG16	Yes	8
162SG17	Yes	3
162SG18	Yes	2
162SG19	Yes	2
162SG20	Yes	2
162SG21	Yes	2

TABLE 3: SUMMARY OF SAMPLE DILUTIONS (CONTINUED)
Technical Memorandum, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398
Alameda Point, Alameda, California

Probe Identification	Sample Required Dilution?	Dilution Factor
163SG01	Yes	8
163SG02	Yes	199
398SG01	Yes	2
389SG01 (Dup)	Yes	2
398SG02	Yes	2
398SG03	Yes	2
398SG04	Yes	2
398SG05	Yes	2
398SG06	Yes	2

Note:

Dup Duplicate sample collected for quality control.

TABLE 4: COMPARISON CRITERIA FOR VOC IN SOIL GAS

Technical Memorandum, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398
Alameda Point, Alameda, California

Analyte	Comparison Criteria[a] ESL ($\mu g/m^3$)	Comparison Criteria[a] CHHSL ($\mu g/m^3$)
1,1,2,2-Tetrachloroethane	140	NA
1,1,1,2-Tetrachloroethane	1,100	NA
1,1,2-Trichloroethane	510	NA
1,1-Dichloroethane	5,100	NA
1,1-Dichloroethene	120,000	NA
1,2,4-Trichlorobenzene	2,000	NA
1,2,4-Trimethylbenzene	NA	NA
1,2-Dichlorobenzene	120,000	NA
1,2-Dichloroethane	390	167
1,2-Dichloropropane	790	NA
1,3,5-Trimethylbenzene	NA	NA
1,3-Butadiene	NA	NA
1,3-Dichlorobenzene	61,000	NA
1,4-Dichlorobenzene	720	NA
1,4-Dioxane	NA	NA
2-Butanone (Methyl Ethyl Ketone)	590,000	NA
2-Hexanone	NA	NA
4-Ethyltoluene	NA	NA
4-Methyl-2-Pentanone (MIBK)	NA	NA
Acetone	1,800,000	NA
Benzene	290	122
Bromodichloromethane	220	NA
Bromoform	NA	NA
Bromomethane	2,900	NA
Carbon Disulfide	NA	NA
Carbon Tetrachloride	190	84.6
Chlorobenzene	35,000	NA
Chloroethane	9,900	NA
Chloroform	1,500	NA
Chloromethane	1,100	NA
Chlorotoluene	NA	NA
cis-1,2-Dichloroethene	20,000	44,400
trans-1,2-Dichloroethene	41,000	88,700

TABLE 4: COMPARISON CRITERIA FOR VOC IN SOIL GAS (CONTINUED)
Technical Memorandum, Subslab Soil Gas Investigation at Buildings 14, 113, 162, 163A, and 398
Alameda Point, Alameda, California

Analyte	Comparison Criteria[a] ESL ($\mu g/m^3$)	CHHSL ($\mu g/m^3$)
1,3-Dichloropropene	520	NA
trans-1,3-Dichloropropene	NA	NA
Cyclohexane	NA	NA
Dibromochloromethane	300	NA
Ethanol	38,000,000	NA
Ethylbenzene	1,200,000	NA
Ethylene Dibromide	NA	NA
Freon 11	NA	NA
Freon 113	NA	NA
Freon 114	NA	NA
Freon 12	NA	NA
Heptane	NA	NA
Hexachlorobutadiene	NA	NA
m,p-Xylene	410,000	887,000
Methylene Chloride	8,200	NA
Methyl-Tertiary-Butyl Ether (MTBE)	31,000	13,400
o-Xylene	410,000	877,000
Styrene	590,000	NA
Tetrachloroethene	1,400	603
Tetrahydrofuran	NA	NA
Toluene	180,000	378,000
Trichloroethene	4,100	1,770
Vinyl Acetate	NA	NA
Vinyl Chloride	110	44.8

Notes:

a Screening criteria are from (1) California Regional Water Quality Control Board's Table E, Shallow Soil Gas Screening Levels for Evaluation of Potential Indoor-Air Impacts, in "Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final," dated February 2005; and (2) California Environment Protection Agency, Table 2, California Human Health Screening Levels for Indoor Air and Soil Gas, in "Use of California Human Health Screening Levels (CHHSL) in Evaluation of Contaminated Properties," dated January 2005.

$\mu g/m^3$ Microgram per cubic meter
ESL Environmental screening level
NA Not available
VOC Volatile organic compound

TABLE 5: SUMMARY OF LEAK TESTING RESULTS
Technical Memorandum, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398
Alameda Point, Alameda, California

Probe Identification	Tracer[a] Detected in Sample?	Detected Tracer Concentration (µg/L)	Tracer Reporting Limit (µg/L)
Building 14			
14SG-01	Yes	0.067	0.01
14SG-02	No	ND	0.01
14SG-03	No	ND	0.02
14SG-04	Yes	0.37	0.01
14SG-05	No	ND	0.01
14SG-06	Yes	0.68	0.01
14SG-08	Yes	0.99	0.01
14SG-09	Yes	0.090	0.01
14SG-10	Yes	0.019	0.01
14SG-11	No	ND	0.01
Building 113			
113SG-01	Yes	0.97	0.01
113SG-02	Yes	1.4	0.01
113SG-03	Yes	0.064	0.01
113SG-03 (Dup)	Yes	0.079	0.01
Building 162			
162SG-01	No	ND	0.04
162SG-02	Yes	0.37	0.01
162SG-03	Yes	1.2	0.03
162SG-04	Yes	1.1	0.01
162SG-05	Yes	1.9	0.01
162SG-06	Yes	0.28	0.02
162SG-06 (Dup)	Yes	0.028	0.02
162SG-07	Yes	0.56	0.02
162SG-08	No	ND	0.04
162SG-09	Yes	0.25	0.01
162SG-09 (Dup)	Yes	1.4	0.01
162SG-10	Yes	0.01	0.01
162SG-11	Yes	0.61	0.01
162SG-12	Yes	2.4	0.02
162SG-13	No	5.6	0.01
162SG-14	Yes	0.89	0.10
162SG-15	No	ND	0.17
162SG-16	No	ND	0.04
162SG-17	Yes	0.029	0.01
162SG-18	Yes	2.6	0.01
162SG-19	Yes	0.48	0.01
162SG-20	Yes	0.03	0.01

TABLE 5: SUMMARY OF LEAK TESTING RESULTS (CONTINUED)
Technical Memorandum, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398
Alameda Point, Alameda, California

Probe Identification	Tracer[a] Detected in Sample?	Detected Tracer Concentration (µg/L)	Tracer Reporting Limit (µg/L)
162SG-21	No	ND	0.01
Building 163A			
163SG-01	Yes	0.30	0.04
163SG-02	No	ND	0.98
Building 398			
398SG-01	Yes	0.58	0.01
398SG-01 (Dup)	Yes	0.22	0.01
398SG-02	Yes	0.62	0.01
398SG-03	Yes	1.9	0.01
398SG-04	Yes	0.24	0.01
398SG-05	Yes	0.48	0.01
398SG-06	Yes	1.7	0.01

Notes:

a Isopropyl alcohol at a concentration of 91 percent (910,000,000 µg/L) was the tracer used for leak testing.

µg/L Microgram per liter
Dup *Duplicate sample collected for quality control.*
ND Not detected

TABLE 6: BUILDING 14 STATISTICAL SUMMARY OF SOIL GAS RESULTS, SEPTEMBER 2006 SAMPLING EVENT

Technical Memorandum, Subslab Soil Gas Investigation of
Buildings 14, 113, 162, 163A, and 398, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over ESL	Number of Non-detects Over ESL	ESL	Number of Detections Over CHHSL	Number of Non-detects Over CHHSL	CHHSL
EPA TO-15 (µg/m^3)														
1,1,1-TRICHLOROETHANE	10	0	0	--	--	--	5.5	13	--	--	NA	--	--	NA
1,1,2,2-TETRACHLOROETHANE	10	0	0	--	--	--	6.9	17	0	0	140	--	--	NA
1,1,2-TRICHLOROETHANE	10	0	0	--	--	--	5.5	13	0	0	510	--	--	NA
1,1-DICHLOROETHANE	10	0	0	--	--	--	4.1	10	0	0	5,100	--	--	NA
1,1-DICHLOROETHENE	10	0	0	--	--	--	4	9.8	0	0	120,000	--	--	NA
1,2,4-TRICHLOROBENZENE	10	0	0	--	--	--	30	73	0	0	2,000	--	--	NA
1,2,4-TRIMETHYLBENZENE	10	6	60	360	10J	1,800 J	5	5.6	--	--	NA	--	--	NA
1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE	10	0	0	--	--	--	7.1	17	--	--	NA	--	--	NA
1,2-DICHLOROBENZENE	10	0	0	--	--	--	6.1	15	0	0	120,000	--	--	NA
1,2-DICHLOROETHANE	10	0	0	--	--	--	4.1	10	0	0	390	0	0	167
1,2-DICHLOROPROPANE	10	0	0	--	--	--	4.7	11	0	0	790	--	--	NA
1,3,5-TRIMETHYLBENZENE	10	6	60	110	12J	500 J	5	5.6	--	--	NA	--	--	NA
1,3-BUTADIENE	10	0	0	--	--	--	2.2	5.5	--	--	NA	--	--	NA
1,3-DICHLOROBENZENE	10	0	0	--	--	--	6.1	15	0	0	61,000	--	--	NA
1,4-DICHLOROBENZENE	10	0	0	--	--	--	6.1	15	0	0	720	--	--	NA
1,4-DIOXANE	10	1	10	23	23J	23 J	14	36	--	--	NA	--	--	NA
2,2,4-TRIMETHYLPENTANE	10	0	0	--	--	--	4.7	12	--	--	NA	--	--	NA
2-BUTANONE	10	9	90	16	3.9J	42 J	7.3	7.3	0	0	590,000	--	--	NA
2-HEXANONE	10	0	0	--	--	--	16	40	--	--	NA	--	--	NA
3-CHLOROPROPENE	10	0	0	--	--	--	13	31	--	--	NA	--	--	NA
4-ETHYL TOLUENE	10	6	60	120	7.2J	610 J	5	5.6	--	--	NA	--	--	NA
4-METHYL-2-PENTANONE	10	3	30	10	6.4J	16 J	4.1	10	--	--	NA	--	--	NA
ACETONE	10	10	100	190	22J	1,400 J	0	0	0	0	1,800,000	--	--	NA
BENZENE	10	0	0	--	--	--	3.2	7.9	0	0	290	0	0	122
BENZYL CHLORIDE	10	0	0	--	--	--	5.2	13	--	--	NA	--	--	NA
BROMODICHLOROMETHANE	10	0	0	--	--	--	6.8	16	0	0	220	--	--	NA
BROMOFORM	10	0	0	--	--	--	10	26	--	--	NA	--	--	NA
BROMOMETHANE	10	0	0	--	--	--	3.9	9.6	0	0	2,900	--	--	NA
CARBON DISULFIDE	10	4	40	8	3.7J	15 J	3.1	7.7	--	--	NA	--	--	NA
CARBON TETRACHLORIDE	10	0	0	--	--	--	6.4	16	0	0	190	0	0	84.6
CHLOROBENZENE	10	0	0	--	--	--	4.6	11	0	0	35,000	--	--	NA
CHLOROETHANE	10	0	0	--	--	--	2.7	6.5	0	0	9,900	--	--	NA
CHLOROFORM	10	4	40	10	7.4J	13 J	4.9	12	0	0	1,500	--	--	NA
CHLOROMETHANE	10	0	0	--	--	--	8.3	20	0	0	1,100	--	--	NA
CIS-1,2-DICHLOROETHENE	10	0	0	--	--	--	4	9.8	0	0	20,000	0	0	44,400
CIS-1,3-DICHLOROPROPENE	10	0	0	--	--	--	4.6	11	0	0	520	--	--	NA
CYCLOHEXANE	10	1	10	19	19J	19 J	3.5	8.5	--	--	NA	--	--	NA
DIBROMOCHLOROMETHANE	10	0	0	--	--	--	8.6	21	0	0	300	--	--	NA
DICHLORODIFLUOROMETHANE	10	0	0	--	--	--	5	12	--	--	NA	--	--	NA
ETHANOL	10	2	20	21	10J	32 J	7.6	19	--	--	NA	--	--	NA
ETHYLBENZENE	10	5	50	29	6J	110 J	4.4	5	0	0	1,200,000	--	--	NA
ETHYLENE DIBROMIDE	10	0	0	--	--	--	7.8	19	--	--	NA	--	--	NA
HEPTANE	10	2	20	12	11J	12 J	4.1	5.5	--	--	NA	--	--	NA
HEXACHLOROBUTADIENE	10	0	0	--	--	--	43	100	--	--	NA	--	--	NA
HEXANE	10	1	10	4	3.9J	3.9 J	3.6	8.7	--	--	NA	--	--	NA
ISOPROPYLBENZENE	10	2	20	29	5.2J	52 J	5	6.6	--	--	NA	--	--	NA
M,P-XYLENE	10	6	60	110	13J	570 J	4.4	5	0	0	410,000	0	0	887,000
METHYL-T-BUTYL ETHER	10	0	0	--	--	--	3.6	8.9	0	0	31,000	0	0	13,400

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over ESL	Number of Non-detects Over ESL	ESL	Number of Detections Over CHHSL	Number of Non-detects Over CHHSL	CHHSL
EPA TO-15 (µg/m³)														
METHYLENE CHLORIDE	10	2	20	10	3.9J	17 J	3.5	8.6	0	0	8,200	--	--	NA
N-PROPYLBENZENE	10	5	50	45	7.3J	180 J	5	5.6	--	--	NA	--	--	NA
NAPHTHALENE	10	0	0	--	--	--	21	52	--	--	NA	--	--	NA
O-XYLENE	10	6	60	67	7.3J	300 J	4.4	5	0	0	410,000	0	0	877,000
STYRENE	10	0	0	--	--	--	4.3	10	0	0	590,000	--	--	NA
TETRACHLOROETHENE	10	6	60	110	13J	300 J	6.8	7.8	0	0	1,400	0	0	603
TETRAHYDROFURAN	10	0	0	--	--	--	3	7.3	--	--	NA	--	--	NA
TOLUENE	10	9	90	14	3.8J	37 J	4.3	4.3	0	0	180,000	0	0	378,000
TRANS-1,2-DICHLOROETHENE	10	0	0	--	--	--	4	9.8	0	0	41,000	0	0	88,700
TRANS-1,3-DICHLOROPROPENE	10	0	0	--	--	--	4.6	11	--	--	NA	--	--	NA
TRICHLOROETHENE	10	5	50	100	44J	180 J	5.4	6.2	0	0	4,100	0	0	1,770
TRICHLOROFLUOROMETHANE	10	2	20	19	8.1J	29 J	5.7	14	--	--	NA	--	--	NA
TRICHLOROTRIFLUOROETHANE	10	3	30	44	21J	59 J	7.7	10	--	--	NA	--	--	NA
VINYL CHLORIDE	10	0	0	--	--	--	2.6	6.3	0	0	110	0	0	44.8

Notes:

Bold denotes values exceeding the screening level (CHHSL or ESL) or reported as non-detect but the reporting limit exceeded the screening criteria.

-- Not detected
CHHSL California Human Health Screening Level (DTSC 2005a)
DTSC Department of Toxic Substances Control
ESL Environmental Screening Level (Water Board 2005)
J Estimated value
µg/m³ Micrograms per cubic meter

TABLE 7: BUILDING 113 STATISTICAL SUMMARY OF SOIL GAS RESULTS, SEPTEMBER 2006 SAMPLING EVENT

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over ESL	Number of Non-detects Over ESL	ESL	Number of Detections Over CHHSL	Number of Non-detects Over CHHSL	CHHSL
EPA TO-15 (µg/m^3)														
1,1,1-TRICHLOROETHANE	4	4	100	36	6J	64 J	0	0	--	--	NA	--	--	NA
1,1,2,2-TETRACHLOROETHANE	4	0	0	--	--	--	6.8	9.2	0	0	140	--	--	NA
1,1,2-TRICHLOROETHANE	4	0	0	--	--	--	5.4	7.3	0	0	510	--	--	NA
1,1-DICHLOROETHANE	4	0	0	--	--	--	4	5.4	0	0	5,100	--	--	NA
1,1-DICHLOROETHENE	4	0	0	--	--	--	3.9	5.3	0	0	120,000	--	--	NA
1,2,4-TRICHLOROBENZENE	4	0	0	--	--	--	30	40	0	0	2,000	--	--	NA
1,2,4-TRIMETHYLBENZENE	4	0	0	--	--	--	4.9	6.6	--	--	NA	--	--	NA
1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE	4	0	0	--	--	--	7	9.4	--	--	NA	--	--	NA
1,2-DICHLOROBENZENE	4	0	0	--	--	--	6	8.1	0	0	120,000	--	--	NA
1,2-DICHLOROETHANE	4	0	0	--	--	--	4	5.4	0	0	390	0	0	167
1,2-DICHLOROPROPANE	4	0	0	--	--	--	4.6	6.2	0	0	790	--	--	NA
1,3,5-TRIMETHYLBENZENE	4	0	0	--	--	--	4.9	6.6	--	--	NA	--	--	NA
1,3-BUTADIENE	4	0	0	--	--	--	2.2	3	--	--	NA	--	--	NA
1,3-DICHLOROBENZENE	4	0	0	--	--	--	6	8.1	0	0	61,000	--	--	NA
1,4-DICHLOROBENZENE	4	0	0	--	--	--	6	8.1	0	0	720	--	--	NA
1,4-DIOXANE	4	0	0	--	--	--	14	19	--	--	NA	--	--	NA
2,2,4-TRIMETHYLPENTANE	4	0	0	--	--	--	4.6	6.3	--	--	NA	--	--	NA
2-BUTANONE	4	4	100	13	5.9J	33 J	0	0	0	0	590,000	--	--	NA
2-HEXANONE	4	0	0	--	--	--	16	22	--	--	NA	--	--	NA
3-CHLOROPROPENE	4	0	0	--	--	--	12	17	--	--	NA	--	--	NA
4-ETHYL TOLUENE	4	0	0	--	--	--	4.9	6.6	--	--	NA	--	--	NA
4-METHYL-2-PENTANONE	4	0	0	--	--	--	4.1	5.5	--	--	NA	--	--	NA
ACETONE	4	4	100	45	16J	120 J	0	0	0	0	1,800,000	--	--	NA
BENZENE	4	0	0	--	--	--	3.2	4.3	0	0	290	0	0	122
BENZYL CHLORIDE	4	0	0	--	--	--	5.2	7	--	--	NA	--	--	NA
BROMODICHLOROMETHANE	4	0	0	--	--	--	6.7	9	0	0	220	--	--	NA
BROMOFORM	4	0	0	--	--	--	10	14	--	--	NA	--	--	NA
BROMOMETHANE	4	0	0	--	--	--	3.9	5.2	0	0	2,900	--	--	NA
CARBON DISULFIDE	4	0	0	--	--	--	3.1	4.2	--	--	NA	--	--	NA
CARBON TETRACHLORIDE	4	0	0	--	--	--	6.3	8.5	0	0	190	0	0	84.6
CHLOROBENZENE	4	0	0	--	--	--	4.6	6.2	0	0	35,000	--	--	NA
CHLOROETHANE	4	0	0	--	--	--	2.6	3.5	0	0	9,900	--	--	NA
CHLOROFORM	4	0	0	--	--	--	4.8	6.6	0	0	1,500	--	--	NA
CHLOROMETHANE	4	0	0	--	--	--	8.2	11	0	0	1,100	--	--	NA
CIS-1,2-DICHLOROETHENE	4	0	0	--	--	--	3.9	5.3	0	0	20,000	0	0	44,400
CIS-1,3-DICHLOROPROPENE	4	0	0	--	--	--	4.5	6.1	0	0	520	--	--	NA
CYCLOHEXANE	4	0	0	--	--	--	3.4	4.6	--	--	NA	--	--	NA
DIBROMOCHLOROMETHANE	4	0	0	--	--	--	8.5	11	0	0	300	--	--	NA
DICHLORODIFLUOROMETHANE	4	0	0	--	--	--	4.9	6.6	--	--	NA	--	--	NA
ETHANOL	4	0	0	--	--	--	7.5	10	--	--	NA	--	--	NA
ETHYLBENZENE	4	0	0	--	--	--	4.3	5.8	0	0	1,200,000	--	--	NA
ETHYLENE DIBROMIDE	4	0	0	--	--	--	7.6	10	--	--	NA	--	--	NA
HEPTANE	4	0	0	--	--	--	4.1	5.5	--	--	NA	--	--	NA
HEXACHLOROBUTADIENE	4	0	0	--	--	--	42	57	--	--	NA	--	--	NA
HEXANE	4	0	0	--	--	--	3.5	4.7	--	--	NA	--	--	NA
ISOPROPYLBENZENE	4	0	0	--	--	--	4.9	6.6	--	--	NA	--	--	NA
M,P-XYLENE	4	0	0	--	--	--	4.3	5.8	0	0	410,000	0	0	887,000
METHYL-T-BUTYL ETHER	4	0	0	--	--	--	3.6	4.8	0	0	31,000	0	0	13,400

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over ESL	Number of Non-detects Over ESL	ESL	Number of Detections Over CHHSL	Number of Non-detects Over CHHSL	CHHSL
EPA TO-15 (µg/m³)														
METHYLENE CHLORIDE	4	0	0	--	--	--	3.4	4.7	0	0	8,200	--	--	NA
N-PROPYLBENZENE	4	0	0	--	--	--	4.9	6.6	--	--	NA	--	--	NA
NAPHTHALENE	4	0	0	--	--	--	21	28	--	--	NA	--	--	NA
O-XYLENE	4	0	0	--	--	--	4.3	5.8	0	0	410,000	0	0	877,000
STYRENE	4	0	0	--	--	--	4.2	5.7	0	0	590,000	--	--	NA
TETRACHLOROETHENE	4	3	75	160	10 J	240 J	6.7	6.7	0	0	1,400	0	0	603
TETRAHYDROFURAN	4	3	75	14	9.5 J	18 J	4	4	--	--	NA	--	--	NA
TOLUENE	4	1	25	7	7 J	7 J	3.7	5.1	0	0	180,000	0	0	378,000
TRANS-1,2-DICHLOROETHENE	4	0	0	--	--	--	3.9	5.3	0	0	41,000	0	0	88,700
TRANS-1,3-DICHLOROPROPENE	4	0	0	--	--	--	4.5	6.1	--	--	NA	--	--	NA
TRICHLOROETHENE	4	4	100	1,400	21 J	**2,800 J**	0	0	0	0	4,100	2	0	1,770
TRICHLOROFLUOROMETHANE	4	0	0	--	--	--	5.6	7.6	--	--	NA	--	--	NA
TRICHLOROTRIFLUOROETHANE	4	0	0	--	--	--	7.6	10	--	--	NA	--	--	NA
VINYL CHLORIDE	4	0	0	--	--	--	2.5	3.4	0	0	110	0	0	44.8

Notes:

Bold denotes values exceeding the screening level (CHHSL or ESL) or reported as non-detect but the reporting limit exceeded the screening criteria.

--	Not detected
CHHSL	California Human Health Screening Level (DTSC 2005a)
DTSC	Department of Toxic Substances Control
ESL	Environmental Screening Level (Water Board 2005)
J	Estimated value
µg/m³	Micrograms per cubic meter

TABLE 8: BUILDING 162 STATISTICAL SUMMARY OF SOIL GAS RESULTS, SEPTEMBER 2006 SAMPLING EVENT

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over ESL	Number of Non-detects Over ESL	ESL	Number of Detections Over CHHSL	Number of Non-detects Over CHHSL	CHHSL
EPA TO-15 (µg/m³)														
1,1,1-TRICHLOROETHANE	23	15	65	34	6.1 J	140 J	5.4	95	--	--	NA	--	--	NA
1,1,2,2-TETRACHLOROETHANE	23	0	0	--	--	--	6.6	120	0	0	140	--	--	NA
1,1,2-TRICHLOROETHANE	23	0	0	--	--	--	5.3	95	0	0	510	--	--	NA
1,1-DICHLOROETHANE	23	0	0	--	--	--	3.9	70	0	0	5,100	--	--	NA
1,1-DICHLOROETHENE	23	0	0	--	--	--	3.8	69	0	0	120,000	--	--	NA
1,2,4-TRICHLOROBENZENE	23	0	0	--	--	--	29	520	0	0	2,000	--	--	NA
1,2,4-TRIMETHYLBENZENE	23	6	26	7	4.9 J	7.7 J	4.8	86	--	--	NA	--	--	NA
1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE	23	0	0	--	--	--	6.8	120	--	--	NA	--	--	NA
1,2-DICHLOROBENZENE	23	0	0	--	--	--	5.8	100	0	0	120,000	--	--	NA
1,2-DICHLOROETHANE	23	0	0	--	--	--	3.9	70	0	0	390	0	0	167
1,2-DICHLOROPROPANE	23	0	0	--	--	--	4.5	80	0	0	790	--	--	NA
1,3,5-TRIMETHYLBENZENE	23	0	0	--	--	--	4.8	86	--	--	NA	--	--	NA
1,3-BUTADIENE	23	0	0	--	--	--	2.1	38	--	--	NA	--	--	NA
1,3-DICHLOROBENZENE	23	0	0	--	--	--	5.8	100	0	0	61,000	--	--	NA
1,4-DICHLOROBENZENE	23	0	0	--	--	--	5.8	100	0	0	720	--	--	NA
1,4-DIOXANE	23	0	0	--	--	--	14	250	--	--	NA	--	--	NA
2,2,4-TRIMETHYLPENTANE	23	0	0	--	--	--	4.5	81	--	--	NA	--	--	NA
2-BUTANONE	23	12	52	16	3.4 J	38 J	2.9	51	0	0	590,000	--	--	NA
2-HEXANONE	23	0	0	--	--	--	16	280	--	--	NA	--	--	NA
3-CHLOROPROPENE	23	0	0	--	--	--	12	220	--	--	NA	--	--	NA
4-ETHYL TOLUENE	23	1	4	5	4.9	4.9	4.8	86	--	--	NA	--	--	NA
4-METHYL-2-PENTANONE	23	4	17	9	5.9 J	14 J	4	71	--	--	NA	--	--	NA
ACETONE	23	14	61	42	10 J	98 J	14	160	0	0	1,800,000	--	--	NA
BENZENE	23	0	0	--	--	--	3.1	56	0	0	290	0	0	122
BENZYL CHLORIDE	23	0	0	--	--	--	5	90	--	--	NA	--	--	NA
BROMODICHLOROMETHANE	23	0	0	--	--	--	6.5	120	0	0	220	--	--	NA
BROMOFORM	23	0	0	--	--	--	10	180	--	--	NA	--	--	NA
BROMOMETHANE	23	0	0	--	--	--	3.8	68	0	0	2,900	--	--	NA
CARBON DISULFIDE	23	5	22	38	3.1 J	170 J	3	54	--	--	NA	--	--	NA
CARBON TETRACHLORIDE	23	0	0	--	--	--	6.1	**110**	0	0	190	0	1	84.6
CHLOROBENZENE	23	0	0	--	--	--	4.5	80	0	0	35,000	--	--	NA
CHLOROETHANE	23	0	0	--	--	--	2.6	46	0	0	9,900	--	--	NA
CHLOROFORM	23	10	43	40	9.4 J	160 J	4.7	85	0	0	1,500	--	--	NA
CHLOROMETHANE	23	0	0	--	--	--	8	140	0	0	1,100	--	--	NA
CIS-1,2-DICHLOROETHENE	23	6	26	17	5.5 J	23 J	3.8	69	0	0	20,000	0	0	44,400
CIS-1,3-DICHLOROPROPENE	23	0	0	--	--	--	4.4	79	0	0	520	--	--	NA
CYCLOHEXANE	23	0	0	--	--	--	3.3	60	--	--	NA	--	--	NA
DIBROMOCHLOROMETHANE	23	0	0	--	--	--	8.3	150	0	0	300	--	--	NA
DICHLORODIFLUOROMETHANE	23	1	4	5	5.1 J	5.1 J	4.8	86	--	--	NA	--	--	NA
ETHANOL	23	3	13	28	8 J	64 J	7.3	130	--	--	NA	--	--	NA
ETHYLBENZENE	23	0	0	--	--	--	4.2	76	0	0	1,200,000	--	--	NA
ETHYLENE DIBROMIDE	23	0	0	--	--	--	7.4	130	--	--	NA	--	--	NA
HEPTANE	23	0	0	--	--	--	4	71	--	--	NA	--	--	NA
HEXACHLOROBUTADIENE	23	0	0	--	--	--	41	740	--	--	NA	--	--	NA
HEXANE	23	1	4	8	8 J	8 J	3.4	61	--	--	NA	--	--	NA
ISOPROPYLBENZENE	23	0	0	--	--	--	4.8	86	--	--	NA	--	--	NA
M,P-XYLENE	23	1	4	8	8.4 J	8.4 J	4.2	76	0	0	410,000	0	0	887,000
METHYL-T-BUTYL ETHER	23	0	0	--	--	--	3.5	63	0	0	31,000	0	0	13,400

TABLE 8: BUILDING 162 STATISTICAL SUMMARY OF SOIL GAS RESULTS, SEPTEMBER 2006 SAMPLING EVENT (Continued)

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over ESL	Number of Non-detects Over ESL	ESL	Number of Detections Over CHHSL	Number of Non-detects Over CHHSL	CHHSL
EPA TO-15 (µg/m³)														
METHYLENE CHLORIDE	23	2	9	62	3.6J	120 J	3.4	60	0	0	8,200	--	--	NA
N-PROPYLBENZENE	23	0	0	--	--	--	4.8	86	--	--	NA	--	--	NA
NAPHTHALENE	23	0	0	--	--	--	20	360	--	--	NA	--	--	NA
O-XYLENE	23	0	0	--	--	--	4.2	76	0	0	410,000	0	0	877,000
STYRENE	23	0	0	--	--	--	4.1	74	0	0	590,000	--	--	NA
TETRACHLOROETHENE	23	15	65	51	7.7J	160 J	6.6	120	0	0	1,400	0	0	603
TETRAHYDROFURAN	23	7	30	20	3.2J	42 J	2.9	51	--	--	NA	--	--	NA
TOLUENE	23	11	48	15	4J	34 J	3.7	66	0	0	180,000	0	0	378,000
TRANS-1,2-DICHLOROETHENE	23	4	17	14	8.1J	22 J	3.8	69	0	0	41,000	0	0	88,700
TRANS-1,3-DICHLOROPROPENE	23	0	0	--	--	--	4.4	79	--	--	NA	--	--	NA
TRICHLOROETHENE	23	22	96	3,000	14J	**15,000 J**	5.3	5.3	4	0	4,100	12	0	1,770
TRICHLOROFLUOROMETHANE	23	7	30	24	5.8J	99 J	5.4	98	--	--	NA	--	--	NA
TRICHLOROTRIFLUOROETHANE	23	11	48	150	9.5J	620 J	7.4	77	--	--	NA	--	--	NA
VINYL CHLORIDE	23	0	0	--	--	--	2.5	44	0	0	110	0	0	44.8

Notes:

Bold denotes values exceeding the screening level (CHHSL or ESL) or reported as non-detect but the reporting limit exceeded the screening criteria.

--	Not detected
CHHSL	California Human Health Screening Level (DTSC 2005a)
DTSC	Department of Toxic Substances Control
ESL	Environmental Screening Level (Water Board 2005)
J	Estimated value
µg/m³	Micrograms per cubic meter

TABLE 9: BUILDING 163A STATISTICAL SUMMARY OF SOIL GAS RESULTS, SEPTEMBER 2006 SAMPLING EVENT

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over ESL	Number of Non-detects Over ESL	ESL	Number of Detections Over CHHSL	Number of Non-detects Over CHHSL	CHHSL
EPA TO-15 (µg/m³)														
1,1,1-TRICHLOROETHANE	2	1	50	47	47 J	47 J	540	540	--	--	NA	--	--	NA
1,1,2,2-TETRACHLOROETHANE	2	0	0	--	--	--	28	**680**	0	1	140	--	--	NA
1,1,2-TRICHLOROETHANE	2	0	0	--	--	--	22	**540**	0	1	510	--	--	NA
1,1-DICHLOROETHANE	2	1	50	20	20 J	20 J	400	400	0	0	5,100	--	--	NA
1,1-DICHLOROETHENE	2	0	0	--	--	--	16	390	0	0	120,000	--	--	NA
1,2,4-TRICHLOROBENZENE	2	0	0	--	--	--	120	**3,000**	0	1	2,000	--	--	NA
1,2,4-TRIMETHYLBENZENE	2	0	0	--	--	--	20	490	--	--	NA	--	--	NA
1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE	2	0	0	--	--	--	28	700	--	--	NA	--	--	NA
1,2-DICHLOROBENZENE	2	0	0	--	--	--	24	600	0	0	120,000	--	--	NA
1,2-DICHLOROETHANE	2	0	0	--	--	--	16	**400**	0	1	390	0	1	167
1,2-DICHLOROPROPANE	2	0	0	--	--	--	19	460	0	0	790	--	--	NA
1,3,5-TRIMETHYLBENZENE	2	0	0	--	--	--	20	490	--	--	NA	--	--	NA
1,3-BUTADIENE	2	0	0	--	--	--	8.9	220	--	--	NA	--	--	NA
1,3-DICHLOROBENZENE	2	0	0	--	--	--	24	600	0	0	61,000	--	--	NA
1,4-DICHLOROBENZENE	2	0	0	--	--	--	24	600	0	0	720	--	--	NA
1,4-DIOXANE	2	0	0	--	--	--	58	1,400	--	--	NA	--	--	NA
2,2,4-TRIMETHYLPENTANE	2	0	0	--	--	--	19	460	--	--	NA	--	--	NA
2-BUTANONE	2	0	0	--	--	--	12	290	0	0	590,000	--	--	NA
2-HEXANONE	2	0	0	--	--	--	66	1,600	--	--	NA	--	--	NA
3-CHLOROPROPENE	2	0	0	--	--	--	50	1,200	--	--	NA	--	--	NA
4-ETHYL TOLUENE	2	0	0	--	--	--	20	490	--	--	NA	--	--	NA
4-METHYL-2-PENTANONE	2	0	0	--	--	--	16	410	--	--	NA	--	--	NA
ACETONE	2	0	0	--	--	--	38	940	0	0	1,800,000	--	--	NA
BENZENE	2	0	0	--	--	--	13	**320**	0	1	290	0	1	122
BENZYL CHLORIDE	2	0	0	--	--	--	21	520	--	--	NA	--	--	NA
BROMODICHLOROMETHANE	2	0	0	--	--	--	27	**670**	0	1	220	--	--	NA
BROMOFORM	2	0	0	--	--	--	42	1,000	--	--	NA	--	--	NA
BROMOMETHANE	2	0	0	--	--	--	16	390	0	0	2,900	--	--	NA
CARBON DISULFIDE	2	0	0	--	--	--	12	310	--	--	NA	--	--	NA
CARBON TETRACHLORIDE	2	0	0	--	--	--	25	**630**	0	1	190	0	1	84.6
CHLOROBENZENE	2	0	0	--	--	--	18	460	0	0	35,000	--	--	NA
CHLOROETHANE	2	0	0	--	--	--	11	260	0	0	9,900	--	--	NA
CHLOROFORM	2	0	0	--	--	--	20	480	0	0	1,500	--	--	NA
CHLOROMETHANE	2	0	0	--	--	--	33	820	0	0	1,100	--	--	NA
CIS-1,2-DICHLOROETHENE	2	2	100	20,000	290 J	**40,000 J**	0	0	1	0	20,000	0	0	44,400
CIS-1,3-DICHLOROPROPENE	2	0	0	--	--	--	18	450	0	0	520	--	--	NA
CYCLOHEXANE	2	0	0	--	--	--	14	340	--	--	NA	--	--	NA
DIBROMOCHLOROMETHANE	2	0	0	--	--	--	34	**850**	0	1	300	--	--	NA
DICHLORODIFLUOROMETHANE	2	0	0	--	--	--	20	490	--	--	NA	--	--	NA
ETHANOL	2	0	0	--	--	--	30	750	--	--	NA	--	--	NA
ETHYLBENZENE	2	0	0	--	--	--	18	430	0	0	1,200,000	--	--	NA
ETHYLENE DIBROMIDE	2	0	0	--	--	--	31	760	--	--	NA	--	--	NA
HEPTANE	2	0	0	--	--	--	16	410	--	--	NA	--	--	NA
HEXACHLOROBUTADIENE	2	0	0	--	--	--	170	4,200	--	--	NA	--	--	NA
HEXANE	2	0	0	--	--	--	14	350	--	--	NA	--	--	NA
ISOPROPYLBENZENE	2	0	0	--	--	--	20	490	--	--	NA	--	--	NA
M,P-XYLENE	2	0	0	--	--	--	18	430	0	0	410,000	0	0	887,000
METHYL-T-BUTYL ETHER	2	0	0	--	--	--	14	360	0	0	31,000	0	0	13,400

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over ESL	Number of Non-detects Over ESL	ESL	Number of Detections Over CHHSL	Number of Non-detects Over CHHSL	CHHSL
EPA TO-15 (μg/m³)														
METHYLENE CHLORIDE	2	0	0	--	--	--	14	340	0	0	8,200	--	--	NA
N-PROPYLBENZENE	2	0	0	--	--	--	20	490	--	--	NA	--	--	NA
NAPHTHALENE	2	0	0	--	--	--	85	2,100	--	--	NA	--	--	NA
O-XYLENE	2	0	0	--	--	--	18	430	0	0	410,000	0	0	877,000
STYRENE	2	0	0	--	--	--	17	420	0	0	590,000	--	--	NA
TETRACHLOROETHENE	2	0	0	--	--	--	27	**670**	0	0	1,400	0	1	603
TETRAHYDROFURAN	2	0	0	--	--	--	12	290	--	--	NA	--	--	NA
TOLUENE	2	1	50	16	16J	16 J	370	370	0	0	180,000	0	0	378,000
TRANS-1,2-DICHLOROETHENE	2	2	100	980	61J	1,900 J	0	0	0	0	41,000	0	0	88,700
TRANS-1,3-DICHLOROPROPENE	2	0	0	--	--	--	18	450	--	--	NA	--	--	NA
TRICHLOROETHENE	2	2	100	62,000	**3,800J**	**120,000 J**	0	0	1	0	4,100	2	0	1,770
TRICHLOROFLUOROMETHANE	2	0	0	--	--	--	23	560	--	--	NA	--	--	NA
TRICHLOROTRIFLUOROETHANE	2	1	50	35	35J	35 J	760	760	--	--	NA	--	--	NA
VINYL CHLORIDE	2	0	0	--	--	--	10	**250**	0	1	110	0	1	44.8

Notes:

Bold denotes values exceeding the screening level (CHHSL or ESL) or reported as non-detect but the reporting limit exceeded the screening criteria.

-- Not detected
CHHSL California Human Health Screening Level (DTSC 2005a)
DTSC Department of Toxic Substances Control
ESL Environmental Screening Level (Water Board 2005)
J Estimated value
μg/m³ Micrograms per cubic meter

TABLE 10: BUILDING 163A STATISTICAL SUMMARY OF SOIL GAS RESULTS, MARCH 2007 SAMPLING EVENT

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over ESL	Number of Non-detects Over ESL	ESL	Number of Detections Over CHHSL	Number of Non-detects Over CHHSL	CHHSL
EPA TO-15 (µg/m³)														
1,1,1-TRICHLOROETHANE	3	0	0	--	--	--	10	250	--	--	NA	--	--	NA
1,1,2,2-TETRACHLOROETHANE	3	0	0	--	--	--	10	**250**	0	1	140	--	--	NA
1,1,2-TRICHLOROETHANE	3	0	0	--	--	--	10	250	0	0	510	--	--	NA
1,1-DICHLOROETHANE	3	1	33	13	13	13	50	250	0	0	5,100	--	--	NA
1,1-DICHLOROETHENE	3	0	0	--	--	--	10	250	0	0	120,000	--	--	NA
1,2,4-TRICHLOROBENZENE	3	0	0	--	--	--	20	500	0	0	2,000	--	--	NA
1,2,4-TRIMETHYLBENZENE	3	0	0	--	--	--	10	250	--	--	NA	--	--	NA
1,2-DICHLOROBENZENE	3	0	0	--	--	--	20	500	0	0	120,000	--	--	NA
1,2-DICHLOROETHANE	3	0	0	--	--	--	10	**250**	0	0	390	0	1	167
1,2-DICHLOROPROPANE	3	0	0	--	--	--	10	250	0	0	790	--	--	NA
1,3,5-TRIMETHYLBENZENE	3	0	0	--	--	--	10	250	--	--	NA	--	--	NA
1,3-BUTADIENE	3	0	0	--	--	--	10	250	--	--	NA	--	--	NA
1,3-DICHLOROBENZENE	3	0	0	--	--	--	20	500	0	0	61,000	--	--	NA
1,4-DICHLOROBENZENE	3	0	0	--	--	--	20	500	0	0	720	--	--	NA
1,4-DIOXANE	3	0	0	--	--	--	10	250	--	--	NA	--	--	NA
2,2,4-TRIMETHYLPENTANE	3	0	0	--	--	--	10	250	--	--	NA	--	--	NA
2-BUTANONE	3	0	0	--	--	--	10	250	0	0	590,000	--	--	NA
2-HEXANONE	3	0	0	--	--	--	10	250	--	--	NA	--	--	NA
3-CHLOROPROPENE	3	0	0	--	--	--	10	250	--	--	NA	--	--	NA
4-ETHYL TOLUENE	3	0	0	--	--	--	10	250	--	--	NA	--	--	NA
4-METHYL-2-PENTANONE	3	0	0	--	--	--	10	250	--	--	NA	--	--	NA
ACETONE	3	1	33	42	42	42	200	1,000	0	0	1,800,000	--	--	NA
BENZENE	3	0	0	--	--	--	10	**250**	0	0	290	0	1	122
BENZYL CHLORIDE	3	0	0	--	--	--	10	250	--	--	NA	--	--	NA
BROMODICHLOROMETHANE	3	0	0	--	--	--	11	**280**	0	1	220	--	--	NA
BROMOFORM	3	0	0	--	--	--	40	1,000	--	--	NA	--	--	NA
BROMOMETHANE	3	0	0	--	--	--	10	250	0	0	2,900	--	--	NA
CARBON DISULFIDE	3	0	0	--	--	--	10	250	--	--	NA	--	--	NA
CARBON TETRACHLORIDE	3	0	0	--	--	--	10	**250**	0	1	190	0	1	84.6
CHLOROBENZENE	3	0	0	--	--	--	10	250	0	0	35,000	--	--	NA
CHLOROETHANE	3	0	0	--	--	--	10	250	0	0	9,900	--	--	NA
CHLOROFORM	3	0	0	--	--	--	10	250	0	0	1,500	--	--	NA
CHLOROMETHANE	3	0	0	--	--	--	10	250	0	0	1,100	--	--	NA
CIS-1,2-DICHLOROETHENE	3	3	100	4,900	980	12,000	0	0	0	0	20,000	0	0	44,400
CIS-1,3-DICHLOROPROPENE	3	0	0	--	--	--	10	250	0	0	520	--	--	NA
CYCLOHEXANE	3	0	0	--	--	--	10	250	--	--	NA	--	--	NA
DIBROMOCHLOROMETHANE	3	0	0	--	--	--	10	250	0	0	300	--	--	NA
DICHLORODIFLUOROMETHANE	3	0	0	--	--	--	20	500	--	--	NA	--	--	NA
DICHLOROTETRAFLUOROETHANE	3	0	0	--	--	--	20	500	--	--	NA	--	--	NA
ETHYL ACETATE	3	0	0	--	--	--	10	250	--	--	NA	--	--	NA
ETHYLBENZENE	3	1	33	12	12	12	50	250	0	0	1,200,000	--	--	NA
ETHYLENE DIBROMIDE	3	0	0	--	--	--	10	250	--	--	NA	--	--	NA
HEPTANE	3	0	0	--	--	--	10	250	--	--	NA	--	--	NA
HEXACHLOROBUTADIENE	3	0	0	--	--	--	20	500	--	--	NA	--	--	NA
HEXANE	3	0	0	--	--	--	10	250	--	--	NA	--	--	NA
M,P-XYLENE	3	1	33	15	15	15	50	250	0	0	410,000	0	0	887,000
METHYL-T-BUTYL ETHER	3	0	0	--	--	--	10	250	0	0	31,000	0	0	13,400
METHYLENE CHLORIDE	3	0	0	--	--	--	10	250	0	0	8,200	--	--	NA

TABLE 10: BUILDING 163A STATISTICAL SUMMARY OF SOIL GAS RESULTS, MARCH 2007 SAMPLING EVENT (Continued)

Technical Memorandum, Subslab Soil Gas Investigation of
Buildings 14, 113, 162, 163A, and 398, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over ESL	Number of Non-detects Over ESL	ESL	Number of Detections Over CHHSL	Number of Non-detects Over CHHSL	CHHSL
EPA TO-15 (µg/m³)														
NAPHTHALENE	3	0	0	--	--	--	20	500	--	--	NA	--	--	NA
O-XYLENE	3	0	0	--	--	--	10	250	0	0	410,000	0	0	877,000
PROPYLENE	3	0	0	--	--	--	20	500	--	--	NA	--	--	NA
STYRENE	3	0	0	--	--	--	10	250	0	0	590,000	--	--	NA
TETRACHLOROETHENE	3	2	67	150	110	180	250	250	0	0	1,400	0	0	603
TETRAHYDROFURAN	3	0	0	--	--	--	10	250	--	--	NA	--	--	NA
TOLUENE	3	2	67	130	94	160	250	250	0	0	180,000	0	0	378,000
TRANS-1,2-DICHLOROETHENE	3	3	100	190	42	470	0	0	0	0	41,000	0	0	88,700
TRANS-1,3-DICHLOROPROPENE	3	0	0	--	--	--	10	250	--	--	NA	--	--	NA
TRICHLOROETHENE	3	3	100	13,000	**5,500**	**26,000**	0	0	3	0	4,100	3	0	1,770
TRICHLOROFLUOROMETHANE	3	0	0	--	--	--	10	250	--	--	NA	--	--	NA
TRICHLOROTRIFLUOROETHANE	3	0	0	--	--	--	20	500	--	--	NA	--	--	NA
VINYL ACETATE	3	0	0	--	--	--	10	250	--	--	NA	--	--	NA
VINYL BROMIDE	3	0	0	--	--	--	10	250	--	--	NA	--	--	NA
VINYL CHLORIDE	3	0	0	--	--	--	10	**250**	0	1	110	0	2	44.8

Notes:

Bold denotes values exceeding the screening level (CHHSL or ESL) or reported as non-detect but the reporting limit exceeded the screening criteria.

--	Not detected
CHHSL	California Human Health Screening Level (DTSC 2005a)
DTSC	Department of Toxic Substances Control
ESL	Environmental Screening Level (Water Board 2005)

TABLE 11: BUILDING 398 STATISTICAL SUMMARY OF SOIL GAS RESULTS, SEPTEMBER 2006 SAMPLING EVENT

Technical Memorandum, Subslab Soil Gas Investigation of
Buildings 14, 113, 162, 163A, and 398, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over ESL	Number of Non-detects Over ESL	ESL	Number of Detections Over CHHSL	Number of Non-detects Over CHHSL	CHHSL
EPA TO-15 (µg/m³)														
1,1,1-TRICHLOROETHANE	7	7	100	30	18J	47 J	0	0	--	--	NA	--	--	NA
1,1,2,2-TETRACHLOROETHANE	7	0	0	--	--	--	6.6	8.2	0	0	140	--	--	NA
1,1,2-TRICHLOROETHANE	7	0	0	--	--	--	5.3	6.5	0	0	510	--	--	NA
1,1-DICHLOROETHANE	7	0	0	--	--	--	3.9	4.8	0	0	5,100	--	--	NA
1,1-DICHLOROETHENE	7	0	0	--	--	--	3.8	4.7	0	0	120,000	--	--	NA
1,2,4-TRICHLOROBENZENE	7	0	0	--	--	--	29	35	0	0	2,000	--	--	NA
1,2,4-TRIMETHYLBENZENE	7	0	0	--	--	--	4.8	5.8	--	--	NA	--	--	NA
1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE	7	0	0	--	--	--	6.8	8.3	--	--	NA	--	--	NA
1,2-DICHLOROBENZENE	7	0	0	--	--	--	5.8	7.2	0	0	120,000	--	--	NA
1,2-DICHLOROETHANE	7	0	0	--	--	--	3.9	4.8	0	0	390	0	0	167
1,2-DICHLOROPROPANE	7	0	0	--	--	--	4.5	5.5	0	0	790	--	--	NA
1,3,5-TRIMETHYLBENZENE	7	0	0	--	--	--	4.8	5.8	--	--	NA	--	--	NA
1,3-BUTADIENE	7	0	0	--	--	--	2.1	2.6	--	--	NA	--	--	NA
1,3-DICHLOROBENZENE	7	0	0	--	--	--	5.8	7.2	0	0	61,000	--	--	NA
1,4-DICHLOROBENZENE	7	0	0	--	--	--	5.8	7.2	0	0	720	--	--	NA
1,4-DIOXANE	7	0	0	--	--	--	14	17	--	--	NA	--	--	NA
2,2,4-TRIMETHYLPENTANE	7	0	0	--	--	--	4.5	5.6	--	--	NA	--	--	NA
2-BUTANONE	7	7	100	15	3.7J	35 J	0	0	0	0	590,000	--	--	NA
2-HEXANONE	7	0	0	--	--	--	16	19	--	--	NA	--	--	NA
3-CHLOROPROPENE	7	0	0	--	--	--	12	15	--	--	NA	--	--	NA
4-ETHYL TOLUENE	7	0	0	--	--	--	4.8	5.8	--	--	NA	--	--	NA
4-METHYL-2-PENTANONE	7	3	43	51	4.6J	140 J	4.1	4.3	--	--	NA	--	--	NA
ACETONE	7	7	100	49	22J	130 J	0	0	0	0	1,800,000	--	--	NA
BENZENE	7	0	0	--	--	--	3.1	3.8	0	0	290	0	0	122
BENZYL CHLORIDE	7	0	0	--	--	--	5	6.2	--	--	NA	--	--	NA
BROMODICHLOROMETHANE	7	0	0	--	--	--	6.5	8	0	0	220	--	--	NA
BROMOFORM	7	0	0	--	--	--	10	12	--	--	NA	--	--	NA
BROMOMETHANE	7	0	0	--	--	--	3.8	4.6	0	0	2,900	--	--	NA
CARBON DISULFIDE	7	1	14	4	3.8J	3.8 J	3	3.7	--	--	NA	--	--	NA
CARBON TETRACHLORIDE	7	0	0	--	--	--	6.1	7.5	0	0	190	0	0	84.6
CHLOROBENZENE	7	0	0	--	--	--	4.5	5.5	0	0	35,000	--	--	NA
CHLOROETHANE	7	0	0	--	--	--	2.6	3.1	0	0	9,900	--	--	NA
CHLOROFORM	7	4	57	10	7J	13 J	4.7	5.1	0	0	1,500	--	--	NA
CHLOROMETHANE	7	0	0	--	--	--	8	9.8	0	0	1,100	--	--	NA
CIS-1,2-DICHLOROETHENE	7	0	0	--	--	--	3.8	4.7	0	0	20,000	0	0	44,400
CIS-1,3-DICHLOROPROPENE	7	0	0	--	--	--	4.4	5.4	0	0	520	--	--	NA
CYCLOHEXANE	7	1	14	5	4.9J	4.9 J	3.3	4.1	--	--	NA	--	--	NA
DIBROMOCHLOROMETHANE	7	0	0	--	--	--	8.3	10	0	0	300	--	--	NA
DICHLORODIFLUOROMETHANE	7	1	14	8	7.7J	7.7 J	4.8	5.9	--	--	NA	--	--	NA
ETHANOL	7	1	14	10	9.8J	9.8 J	7.3	7.9	--	--	NA	--	--	NA
ETHYLBENZENE	7	1	14	5	5J	5 J	4.2	5.2	0	0	1,200,000	--	--	NA
ETHYLENE DIBROMIDE	7	0	0	--	--	--	7.4	9.1	--	--	NA	--	--	NA
HEPTANE	7	0	0	--	--	--	4	4.9	--	--	NA	--	--	NA
HEXACHLOROBUTADIENE	7	0	0	--	--	--	41	51	--	--	NA	--	--	NA
HEXANE	7	2	29	8	5.4J	11 J	3.4	4.2	--	--	NA	--	--	NA
ISOPROPYLBENZENE	7	0	0	--	--	--	4.8	5.8	--	--	NA	--	--	NA
M,P-XYLENE	7	2	29	10	8.4J	11 J	4.2	5.2	0	0	410,000	0	0	887,000
METHYL-T-BUTYL ETHER	7	0	0	--	--	--	3.5	4.3	0	0	31,000	0	0	13,400

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over ESL	Number of Non-detects Over ESL	ESL	Number of Detections Over CHHSL	Number of Non-detects Over CHHSL	CHHSL
EPA TO-15 (µg/m³)														
METHYLENE CHLORIDE	7	3	43	6	4.8J	6.1 J	3.4	4.1	0	0	8,200	--	--	NA
N-PROPYLBENZENE	7	0	0	--	--	--	4.8	5.8	--	--	NA	--	--	NA
NAPHTHALENE	7	0	0	--	--	--	20	25	--	--	NA	--	--	NA
O-XYLENE	7	1	14	5	4.7J	4.7 J	4.2	5.2	0	0	410,000	0	0	877,000
STYRENE	7	0	0	--	--	--	4.1	5.1	0	0	590,000	--	--	NA
TETRACHLOROETHENE	7	6	86	50	11J	140 J	6.6	6.6	0	0	1,400	0	0	603
TETRAHYDROFURAN	7	7	100	10	4.3J	21 J	0	0	--	--	NA	--	--	NA
TOLUENE	7	3	43	16	4.5J	26 J	3.6	4.5	0	0	180,000	0	0	378,000
TRANS-1,2-DICHLOROETHENE	7	0	0	--	--	--	3.8	4.7	0	0	41,000	0	0	88,700
TRANS-1,3-DICHLOROPROPENE	7	0	0	--	--	--	4.4	5.4	--	--	NA	--	--	NA
TRICHLOROETHENE	7	4	57	440	12J	1,400 J	5.2	5.4	0	0	4,100	0	0	1,770
TRICHLOROFLUOROMETHANE	7	0	0	--	--	--	5.4	6.7	--	--	NA	--	--	NA
TRICHLOROTRIFLUOROETHANE	7	4	57	13	9J	18 J	7.6	9.1	--	--	NA	--	--	NA
VINYL CHLORIDE	7	0	0	--	--	--	2.5	3	0	0	110	0	0	44.8

Notes:

Bold denotes values exceeding the screening level (CHHSL or ESL) or reported as non-detect but the reporting limit exceeded the screening criteria.

-- Not detected
CHHSL California Human Health Screening Level (DTSC 2005a)
DTSC Department of Toxic Substances Control
ESL Environmental Screening Level (Water Board 2005)
J Estimated value
µg/m³ Micrograms per cubic meter

TABLE 12: BUILDING 14 EXPOSURE POINT CONCENTRATION SUMMARY, SEPTEMBER 2006 SAMPLING EVENT

Technical Memorandum, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398, Alameda Point, Alameda, California

Scenario Timeframe:	Current
Medium:	Soil Gas
Exposure Medium:	Soil Gas

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [a]		Maximum Concentration (Qualifier)		Exposure Point Concentration	
								Value	Statistic [b]
Soil Gas	1,2,4-Trimethylbenzene	µg/m³	2.22E+02	5.64E+02	NP	1.80E+03	J	5.64E+02	(2)
	1,3,5-Trimethylbenzene	µg/m³	7.30E+01	1.81E+02	NP	5.00E+02	J	1.81E+02	(2)
	1,4-Dioxane	µg/m³	9.53E+00	2.12E+01	N/A	2.30E+01	J	2.12E+01	(4)
	2-Butanone	µg/m³	1.50E+01	2.68E+01	G	4.20E+01	J	2.68E+01	(1)
	4-Ethyl Toluene	µg/m³	7.44E+01	1.91E+02	NP	6.10E+02	J	1.91E+02	(2)
	4-Methyl-2-pentanone	µg/m³	4.70E+00	1.09E+01	N/A	1.60E+01	J	1.09E+01	(3)
	Acetone	µg/m³	1.89E+02	1.53E+03	NP	1.40E+03	J	1.40E+03	(1)
	Carbon disulfide	µg/m³	4.33E+00	1.04E+01	N/A	1.50E+01	J	1.04E+01	(3)
	Chloroform	µg/m³	7.31E+00	1.17E+01	N/A	1.30E+01	J	1.17E+01	(3)
	Cyclohexane	µg/m³	3.85E+00	1.20E+01	N/A	1.90E+01	J	1.20E+01	(4)
	Ethylbenzene	µg/m³	1.76E+01	3.79E+01	NP	1.10E+02	J	3.79E+01	(2)
	Heptane	µg/m³	8.77E+00	1.12E+01	N/A	1.20E+01	J	1.12E+01	(3)
	Hexane	µg/m³	2.18E+00	5.05E+00	N/A	3.90E+00	J	3.90E+00	(4)
	Isopropylbenzene	µg/m³	6.10E+00	2.84E+01	N/A	5.20E+01	J	2.84E+01	(3)
	Methylene chloride	µg/m³	2.64E+00	9.78E+00	N/A	1.70E+01	J	9.78E+00	(3)
	Tetrachloroethene	µg/m³	7.07E+01	1.42E+02	NP	3.00E+02	J	1.42E+02	(2)
	Toluene	µg/m³	1.28E+01	2.27E+01	G	3.70E+01	J	2.27E+01	(1)
	Trichloroethene	µg/m³	7.24E+01	1.12E+02	NP	1.80E+02	J	1.12E+02	(2)
	Trichlorofluoromethane	µg/m³	4.48E+00	1.68E+01	N/A	2.90E+01	J	1.68E+01	(3)
	Trichlorotrifluoroethane	µg/m³	1.75E+01	4.67E+01	N/A	5.90E+01	J	4.67E+01	(3)
	m,p-Xylene	µg/m³	7.32E+01	1.84E+02	NP	5.70E+02	J	1.84E+02	(2)
	n-Propylbenzene	µg/m³	2.60E+01	6.00E+01	NP	1.80E+02	J	6.00E+01	(2)
	o-Xylene	µg/m³	4.32E+01	1.02E+02	NP	3.00E+02	J	1.02E+02	(2)

Notes: See the text for a detailed description of the statistical methods used.

a Tested for all chemicals with at least 5 samples and detection frequencies greater than or equal to 85 percent using the Shapiro-Wilk W test (a 5 percent level of significance was used for all tests). All other chemical distributions were treated as *nonparametric in calculations of the mean, UCL, and EPC.*
Distribution Codes: G= gamma, L= lognormal, N= normal, NP= nonparametric

b Methods used to calculate summary statistics were based on the relative sample size and DF.
Statistics Codes are defined as follows:
The EPC is the lesser of the UCL and the maximum detected concentration
(1) DF greater than or equal to 85 percent: methods followed recommendations in EPA's ProUCL software package (EPA 2004)
(2) DF greater than or equal to 50 percent and less than 85 percent: flipped Kaplan-Meier method was used following Helsel (2005)
(3) DF greater than or equal to 20 percent and less than 50 percent: regression on order statistics (ROS) method used following Helsel (2005).
For cases where the maximum concentration was a censored value or fewer than four measurements were detected, method (4) was used.
(4) Detection frequencies less than 20 percent: Monte Carlo methods were used following the "Bounding" approach described in EPA (2002).
(5) For sample sizes less than 4, the maximum detected concentration was used as the EPC. No results are reported for the mean or UCL.

µg/m³ Microgram per cubic meter
DF Detection frequency
EPC Exposure point concentration
J Estimated value
N/A Not applicable, no result reported because the sample size was less than 4.
UCL One-sided upper confidence limit of the mean. Following EPA (2004), this can be either a 95, 97.5, or 99 percent UCL.

References

Helsel, D. 2005. *Nondetects and Data Analysis: Statistics for Censored Environmental Data*. John Wiley & Sons, Inc., New York, NY. 250 p.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Office of Emergency and Remedial Response. Washington, DC. December.

EPA. 2004. "ProUCL Version 3.0 User Guide." Prepared by Singh, A., Singh, A.K. and R.W. Maichle for the U.S. Environmental Protection Agency, Technical Support Center, Las Vegas, NV. April.

TABLE 13: BUILDING 113 EXPOSURE POINT CONCENTRATION SUMMARY, SEPTEMBER 2006 SAMPLING EVENT

Technical Memorandum, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398, Alameda Point, Alameda, California

Scenario Timeframe:	Current
Medium:	Soil Gas
Exposure Medium:	Soil Gas

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [a]		Maximum Concentration (Qualifier)		Exposure Point Concentration Value	Exposure Point Concentration Statistic [b]
Soil Gas	1,1,1-Trichloroethane	μg/m³	N/A	N/A	N/A	6.40E+01	J	6.40E+01	(5)
	2-Butanone	μg/m³	N/A	N/A	N/A	3.30E+01	J	3.30E+01	(5)
	Acetone	μg/m³	N/A	N/A	N/A	1.20E+02	J	1.20E+02	(5)
	Tetrachloroethene	μg/m³	N/A	N/A	N/A	2.40E+02	J	2.40E+02	(5)
	Tetrahydrofuran	μg/m³	N/A	N/A	N/A	1.80E+01	J	1.80E+01	(5)
	Trichloroethene	μg/m³	N/A	N/A	N/A	2.70E+03	J	2.70E+03	(5)

Notes: See the text for a detailed description of the statistical methods used.

a Tested for all chemicals with at least 5 samples and detection frequencies greater than or equal to 85 percent using the Shapiro-Wilk W test (a 5 percent level of significance was used for all tests). All other chemical distributions were treated as nonparametric in calculations of the mean, UCL, and EPC.
Distribution Codes: G= gamma, L= lognormal, N= normal, NP= nonparametric

b Methods used to calculate summary statistics were based on the relative sample size and DF.
Statistics Codes are defined as follows:
The EPC is the lesser of the UCL and the maximum detected concentration
(1) DF greater than or equal to 85 percent: methods followed recommendations in EPA's ProUCL software package (EPA 2004)
(2) DF greater than or equal to 50 percent and less than 85 percent: flipped Kaplan-Meier method was used following Helsel (2005)
(3) DF greater than or equal to 20 percent and less than 50 percent: regression on order statistics (ROS) method used following Helsel (2005).
For cases where the maximum concentration was a censored value or fewer than four measurements were detected, method (4) was used.
(4) Detection frequencies less than 20 percent: Monte Carlo methods were used following the "Bounding" approach described in EPA (2002).
(5) For sample sizes less than 4, the maximum detected concentration was used as the EPC. No results are reported for the mean or UCL.

μg/m³ Microgram per cubic meter
DF Detection frequency
EPC Exposure point concentration
J Estimated value
N/A Not applicable, no result reported because the sample size was less than 4.
UCL One-sided upper confidence limit of the mean. Following EPA (2004), this can be either a 95, 97.5, or 99 percent UCL.

References
Helsel, D. 2005. *Nondetects and Data Analysis: Statistics for Censored Environmental Data*. John Wiley & Sons, Inc., New York, NY. 250 p.
U.S. Environmental Protection Agency (EPA). 2002. "Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Office of Emergency and Remedial Response. Washington, DC. December.
EPA. 2004. "ProUCL Version 3.0 User Guide." Prepared by Singh, A., Singh, A.K. and R.W. Maichle for the U.S. Environmental Protection Agency, Technical Support Center, Las Vegas, NV. April.

TABLE 14: BUILDING 162 EXPOSURE POINT CONCENTRATION SUMMARY, SEPTEMBER 2006 SAMPLING EVENT

Technical Memorandum, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398, Alameda Point, Alameda, California

Scenario Timeframe:	Current
Medium:	Soil Gas
Exposure Medium:	Soil Gas

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [a]		Maximum Concentration (Qualifier)		Exposure Point Concentration	
								Value	Statistic [b]
Soil Gas	1,1,1-Trichloroethane	µg/m^3	2.39E+01	3.63E+01	NP	1.40E+02	J	3.63E+01	(2)
	1,2,4-Trimethylbenzene	µg/m^3	5.78E+00	6.92E+00	NP	7.70E+00	J	6.92E+00	(2)
	2-Butanone	µg/m^3	1.09E+01	1.56E+01	NP	3.80E+01	J	1.56E+01	(2)
	4-Ethyl Toluene	µg/m^3	2.75E+00	5.84E+00	N/A	4.90E+00		4.90E+00	(4)
	4-Methyl-2-pentanone	µg/m^3	4.90E+00	6.72E+00	N/A	8.40E+00	J	6.72E+00	(3)
	Acetone	µg/m^3	3.41E+01	4.46E+01	NP	9.80E+01	J	4.46E+01	(2)
	Carbon disulfide	µg/m^3	9.81E+00	4.48E+01	NP	1.70E+02	J	4.48E+01	(3)
	Chloroform	µg/m^3	1.86E+01	5.14E+01	NP	1.60E+02	J	5.14E+01	(3)
	Hexane	µg/m^3	2.57E+00	5.64E+00	N/A	8.00E+00	J	5.64E+00	(4)
	Methylene chloride	µg/m^3	1.06E+01	3.86E+01	N/A	1.20E+02	J	3.86E+01	(4)
	Tetrachloroethene	µg/m^3	3.30E+01	4.79E+01	NP	1.60E+02	J	4.79E+01	(2)
	Tetrahydrofuran	µg/m^3	6.56E+00	1.82E+01	NP	4.20E+01	J	1.82E+01	(3)
	Toluene	µg/m^3	1.01E+01	1.38E+01	NP	3.40E+01	J	1.38E+01	(2)
	Trichloroethene	µg/m^3	2.87E+03	6.03E+03	G	1.50E+04	J	6.03E+03	(1)
	Trichlorofluoromethane	µg/m^3	7.82E+00	2.82E+01	NP	9.90E+01	J	2.82E+01	(3)
	Trichlorotrifluoroethane	µg/m^3	7.39E+01	2.22E+02	NP	6.20E+02	J	2.22E+02	(3)
	cis-1,2-Dichloroethene	µg/m^3	6.45E+00	1.30E+01	NP	2.00E+01	J	1.30E+01	(3)
	m,p-Xylene	µg/m^3	2.79E+00	6.06E+00	N/A	8.40E+00	J	6.06E+00	(4)
	trans-1,2-Dichloroethene	µg/m^3	4.82E+00	1.08E+01	N/A	2.20E+01	J	1.08E+01	(3)

Notes: *See the text for a detailed description of the statistical methods used.*

a — Tested for all chemicals with at least 5 samples and detection frequencies greater than or equal to 85 percent using the Shapiro-Wilk W test (a 5 percent level of significance was used for all tests). All other chemical distributions were treated as nonparametric in calculations of the mean, UCL, and EPC.
Distribution Codes: G= gamma, L= lognormal, N= normal, NP= nonparametric

b — Methods used to calculate summary statistics were based on the relative sample size and DF.
Statistics Codes are defined as follows:
The EPC is the lesser of the UCL and the maximum detected concentration
(1) DF greater than or equal to 85 percent: methods followed recommendations in EPA's ProUCL software package (EPA 2004)
(2) DF greater than or equal to 50 percent and less than 85 percent: flipped Kaplan-Meier method was used following Helsel (2005)
(3) DF greater than or equal to 20 percent and less than 50 percent: regression on order statistics (ROS) method used following Helsel (2005).
For cases where the maximum concentration was a censored value or fewer than four measurements were detected, method (4) was used.
(4) Detection frequencies less than 20 percent: Monte Carlo methods were used following the "Bounding" approach described in EPA (2002).
(5) For sample sizes less than 4, the maximum detected concentration was used as the EPC. No results are reported for the mean or UCL.

µg/m^3	Microgram per cubic meter
DF	Detection frequency
EPC	Exposure point concentration
J	Estimated value
N/A	Not applicable, no result reported because the sample size was less than 4.
UCL	One-sided upper confidence limit of the mean. Following EPA (2004), this can be either a 95, 97.5, or 99 percent UCL.

References

Helsel, D. 2005. *Nondetects and Data Analysis: Statistics for Censored Environmental Data*. John Wiley & Sons, Inc., New York, NY. 250 p.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Office of Emergency and Remedial Response. Washington, DC. December.

EPA. 2004. "ProUCL Version 3.0 User Guide." Prepared by Singh, A., Singh, A.K. and R.W. Maichle for the U.S. Environmental Protection Agency, Technical Support Center, Las Vegas, NV. April.

TABLE 15: BUILDING 163A EXPOSURE POINT CONCENTRATION SUMMARY, SEPTEMBER 2006 SAMPLING EVENT

Technical Memorandum, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398, Alameda Point, Alameda, California

Scenario Timeframe:	Current
Medium:	Soil Gas
Exposure Medium:	Soil Gas

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)[a]		Maximum Concentration (Qualifier)		Exposure Point Concentration Value	Exposure Point Concentration Statistic[b]
Soil Gas	1,1,1-Trichloroethane	μg/m³	N/A	N/A	N/A	4.70E+01	J	4.70E+01	(5)
	1,1-Dichlorethane	μg/m³	N/A	N/A	N/A	2.00E+01	J	2.00E+01	(5)
	Toluene	μg/m³	N/A	N/A	N/A	1.60E+01	J	1.60E+01	(5)
	Trichloroethene	μg/m³	N/A	N/A	N/A	1.20E+05	J	1.20E+05	(5)
	Trichlorotrifluoroethane	μg/m³	N/A	N/A	N/A	3.50E+01	J	3.50E+01	(5)
	cis-1,2-Dichloroethene	μg/m³	N/A	N/A	N/A	4.00E+04	J	4.00E+04	(5)
	trans-1,2-Dichloroethene	μg/m³	N/A	N/A	N/A	1.90E+03	J	1.90E+03	(5)

Notes: See the text for a detailed description of the statistical methods used.

a Tested for all chemicals with at least 5 samples and detection frequencies greater than or equal to 85 percent using the Shapiro-Wilk W test (a 5 percent level of significance was used for all tests). All other chemical distributions were treated as nonparametric in calculations of the mean, UCL, and EPC.
Distribution Codes: G= gamma, L= lognormal, N= normal, NP= nonparametric

b Methods used to calculate summary statistics were based on the relative sample size and DF.
Statistics Codes are defined as follows:
The EPC is the lesser of the UCL and the maximum detected concentration
(1) DF greater than or equal to 85 percent: methods followed recommendations in EPA's ProUCL software package (EPA 2004)
(2) DF greater than or equal to 50 percent and less than 85 percent: flipped Kaplan-Meier method was used following Helsel (2005)
(3) DF greater than or equal to 20 percent and less than 50 percent: regression on order statistics (ROS) method used following Helsel (2005). For cases where the maximum concentration was a censored value or fewer than four measurements were detected, method (4) was used.
(4) Detection frequencies less than 20 percent: Monte Carlo methods were used following the "Bounding" approach described in EPA (2002).
(5) For sample sizes less than 4, the maximum detected concentration was used as the EPC. No results are reported for the mean or UCL.

μg/m³ Microgram per cubic meter
DF Detection frequency
EPC Exposure point concentration
J Estimated value
N/A Not applicable, no result reported because the sample size was less than 4.
UCL One-sided upper confidence limit of the mean. Following EPA (2004), this can be either a 95, 97.5, or 99 percent UCL.

References

Helsel, D. 2005. *Nondetects and Data Analysis: Statistics for Censored Environmental Data*. John Wiley & Sons, Inc., New York, NY. 250 p.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Office of Emergency and Remedial Response. Washington, DC. December.

EPA. 2004. "ProUCL Version 3.0 User Guide." Prepared by Singh, A., Singh, A.K. and R.W. Maichle for the U.S. Environmental Protection Agency, Technical Support Center, Las Vegas, NV. April.

TABLE 16: BUILDING 163A EXPOSURE POINT CONCENTRATION SUMMARY, MARCH 2007 SAMPLING EVENT

Technical Memorandum, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398, Alameda Point, Alameda, California

Scenario Timeframe:	Current
Medium:	Soil Gas
Exposure Medium:	Soil Gas

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [a]		Maximum Concentration	Exposure Point Concentration	
							Value	Statistic [b]
Soil Gas	1,1-Dichloroethane	µg/m^3	N/A	N/A	N/A	1.30E+01	1.30E+01	(5)
	Acetone	µg/m^3	N/A	N/A	N/A	4.20E+01	4.20E+01	(5)
	Ethylbenzene	µg/m^3	N/A	N/A	N/A	1.20E+01	1.20E+01	(5)
	Tetrachloroethene	µg/m^3	N/A	N/A	N/A	1.80E+02	1.80E+02	(5)
	Toluene	µg/m^3	N/A	N/A	N/A	1.60E+02	1.60E+02	(5)
	Trichloroethene	µg/m^3	N/A	N/A	N/A	2.60E+04	2.60E+04	(5)
	cis-1,2-Dichloroethene	µg/m^3	N/A	N/A	N/A	1.20E+04	1.20E+04	(5)
	trans-1,2-Dichloroethene	µg/m^3	N/A	N/A	N/A	4.70E+02	4.70E+02	(5)
	m,p-Xylene	µg/m^3	N/A	N/A	N/A	1.50E+01	1.50E+01	(5)

Notes: See the text for a detailed description of the statistical methods used.

a Tested for all chemicals with at least 5 samples and detection frequencies greater than or equal to 85 percent using the Shapiro-Wilk W test (a 5 percent level of significance was used for all tests). All other chemical distributions were treated as nonparametric in calculations of the mean, UCL, and EPC.
Distribution Codes: G= gamma, L= lognormal, N= normal, NP= nonparametric

b Methods used to calculate summary statistics were based on the relative sample size and DF.
Statistics Codes are defined as follows:
The EPC is the lesser of the UCL and the maximum detected concentration
(1) DF greater than or equal to 85 percent: methods followed recommendations in EPA's ProUCL software package (EPA 2004)
(2) DF greater than or equal to 50 percent and less than 85 percent: flipped Kaplan-Meier method was used following Helsel (2005)
(3) DF greater than or equal to 20 percent and less than 50 percent: regression on order statistics (ROS) method used following Helsel (2005).
For cases where the maximum concentration was a censored value or fewer than four measurements were detected, method (4) was used.
(4) Detection frequencies less than 20 percent: Monte Carlo methods were used following the "Bounding" approach described in EPA (2002).
(5) For sample sizes less than 4, the maximum detected concentration was used as the EPC. No results are reported for the mean or UCL.

µg/m^3 Microgram per cubic meter
DF Detection frequency
EPC Exposure point concentration
N/A Not applicable, no result reported because the sample size was less than 4.
UCL One-sided upper confidence limit of the mean. Following EPA (2004), this can be either a 95, 97.5, or 99 percent UCL.

References

Helsel, D. 2005. *Nondetects and Data Analysis: Statistics for Censored Environmental Data*. John Wiley & Sons, Inc., New York, NY. 250 p.
U.S. Environmental Protection Agency (EPA). 2002. "Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Office of Emergency and Remedial Response. Washington, DC. December.
EPA. 2004. "ProUCL Version 3.0 User Guide." Prepared by Singh, A., Singh, A.K. and R.W. Maichle for the U.S. Environmental Protection Agency, Technical Support Center, Las Vegas, NV. April.

TABLE 17: BUILDING 398 EXPOSURE POINT CONCENTRATION SUMMARY, SEPTEMBER 2006 SAMPLING EVENT

Technical Memorandum, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398, Alameda Point, Alameda, California

Scenario Timeframe:	Current
Medium:	Soil Gas
Exposure Medium:	Soil Gas

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [a]		Maximum Concentration (Qualifier)		Exposure Point Concentration	
								Value	Statistic [b]
Soil Gas	1,1,1-Trichloroethane	μg/m³	3.18E+01	4.11E+01	N	4.70E+01	J	4.11E+01	(1)
	2-Butanone	μg/m³	1.62E+01	2.58E+01	N	3.50E+01	J	2.58E+01	(1)
	4-Methyl-2-pentanone	μg/m³	2.77E+01	7.38E+01	N/A	1.40E+02	J	7.38E+01	(2)
	Acetone	μg/m³	5.08E+01	1.04E+02	G	1.30E+02	J	1.04E+02	(1)
	Carbon disulfide	μg/m³	1.98E+00	4.70E+00	N/A	3.80E+00	J	3.80E+00	(4)
	Chloroform	μg/m³	8.67E+00	1.30E+01	N/A	1.30E+01	J	1.30E+01	(2)
	Cyclohexane	μg/m³	2.32E+00	5.60E+00	N/A	4.90E+00	J	4.90E+00	(4)
	Dichlorodifluoromethane	μg/m³	3.40E+00	8.52E+00	N/A	7.70E+00	J	7.70E+00	(4)
	Ethylbenzene	μg/m³	5.00E+00	5.00E+00	N/A	5.00E+00	J	5.00E+00	(3)
	Hexane	μg/m³	3.38E+00	1.08E+01	N/A	1.10E+01	J	1.08E+01	(3)
	Methylene chloride	μg/m³	3.53E+00	6.43E+00	N/A	6.10E+00	J	6.10E+00	(3)
	Tetrachloroethene	μg/m³	5.07E+01	8.61E+01	NP	1.40E+02	J	8.61E+01	(2)
	Tetrahydrofuran	μg/m³	1.07E+01	1.56E+01	N	2.10E+01	J	1.56E+01	(1)
	Toluene	μg/m³	1.20E+01	2.70E+01	N/A	2.60E+01	J	2.60E+01	(3)
	Trichloroethene	μg/m³	2.99E+02	7.00E+02	N/A	1.40E+03	J	7.00E+02	(2)
	Trichlorotrifluoroethane	μg/m³	1.06E+01	1.80E+01	N/A	1.80E+01	J	1.80E+01	(2)
	m,p-Xylene	μg/m³	6.01E+00	1.16E+01	N/A	1.10E+01	J	1.10E+01	(3)
	o-Xylene	μg/m³	4.70E+00	4.70E+00	N/A	4.70E+00	J	4.70E+00	(3)

Notes: See the text for a detailed description of the statistical methods used.

a Tested for all chemicals with at least 5 samples and detection frequencies greater than or equal to 85 percent using the Shapiro-Wilk W test (a 5 percent level of significance was used for all tests). All other chemical distributions were treated as nonparametric in calculations of the mean, UCL, and EPC.
Distribution Codes: G= gamma, L= lognormal, N= normal, NP= nonparametric

b Methods used to calculate summary statistics were based on the relative sample size and DF.
Statistics Codes are defined as follows:
The EPC is the lesser of the UCL and the maximum detected concentration
(1) DF greater than or equal to 85 percent: methods followed recommendations in EPA's ProUCL software package (EPA 2004)
(2) DF greater than or equal to 50 percent and less than 85 percent: flipped Kaplan-Meier method was used following Helsel (2005)
(3) DF greater than or equal to 20 percent and less than 50 percent: regression on order statistics (ROS) method used following Helsel (2005). For cases where the maximum concentration was a censored value or fewer than four measurements were detected, method (4) was used.
(4) Detection frequencies less than 20 percent: Monte Carlo methods were used following the "Bounding" approach described in EPA (2002).
(5) For sample sizes less than 4, the maximum detected concentration was used as the EPC. No results are reported for the mean or UCL.

μg/m³ Microgram per cubic meter
DF Detection frequency
EPC Exposure point concentration
J Estimated value
N/A Not applicable, no result reported because the sample size was less than 4.
UCL One-sided upper confidence limit of the mean. Following EPA (2004b), this can be either a 95, 97.5, or 99 percent UCL.

References

Helsel, D. 2005. *Nondetects and Data Analysis: Statistics for Censored Environmental Data*. John Wiley & Sons, Inc., New York, NY. 250 p.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Office of Emergency and Remedial Response. Washington, DC. December.

EPA. 2004. "ProUCL Version 3.0 User Guide." Prepared by Singh, A., Singh, A.K. and R.W. Maichle for the U.S. Environmental Protection Agency, Technical Support Center, Las Vegas, NV. April.

TABLE 18: SUMMARY OF INPUT PARAMETERS

Technical Memorandum, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398, Alameda Point, Alameda, California

Building	Depth Below Grade to Bottom of Enclosed Space Floor (Slab on Grade) (cm)	Water-Filled Porosity (unitless)	Soil Bulk Density (g/cm³)	Soil Porosity = 1 - Bd/Ps (unitless)	Soil Gas Sampling Depth Below Grade (cm)	Thickness of Soil Stratum (cm)	Average Soil/GW Temperature (°C)	Soil Stratum Directly Above Water Table (A, B, or C)	Soil Stratum A Soil Type	Enclosed Space Floor Thickness (cm)	Soil-Building Pressure Differential (g/cm-s²)	Enclosed Space Floor Length (cm)	Enclosed Space Floor Width (cm)	Enclosed Space Height (cm)	Floor-Wall Seam Crack Width (cm)	Indoor Air Exchange Rate (hr⁻¹)	Soil Gas Advection Rate (L/min)
14	15 (5 & 7)	0.054 (4)	1.66 (4)	0.375 (4)	35	35	16.7 (3)	A	Sand (2)	23 (1)	40 (5 & 7)	8534	4877	914	0.1 (5)	1.0 (6)	208.1 (8)
113	15 (5 & 7)	0.054 (4)	1.66 (4)	0.375 (4)	31	31	16.7 (3)	A	Sand (2)	20 (1)	40 (5 & 7)	5944	1829	914	0.1 (5)	1.0 (6)	54.4 (8)
162	15 (5 & 7)	0.054 (4)	1.66 (4)	0.375 (4)	32	32	16.7 (3)	A	Sand (2)	19 (1)	40 (5 & 7)	10973	5944	610	0.1 (5)	1.0 (6)	326.1 (8)
163A	15 (5 & 7)	0.054 (4)	1.66 (4)	0.375 (4)	28	28	16.7 (3)	A	Sand (2)	15 (1)	40 (5 & 7)	4267	2286	792	0.1 (5)	1.0 (6)	48.8 (8)
398	15 (5 & 7)	0.054 (4)	1.66 (4)	0.375 (4)	29	29	16.7 (3)	A	Sand (2)	17 (1)	40 (5 & 7)	5944	3658	427	0.1 (5)	1.0 (6)	108.7 (8)

Notes:
(1) The building foundation slab thickness is based upon building-specific values.
(2) The most predominant soil type found across the site was Sand (S).
(3) Average soil and groundwater temperature were determined from Figure A-1 of DTSC 2005.
(4) Default values from the DTSC's 2003 Vapor Intrusion Model (DTSC 2003) for Sand.
(5) Default value from EPA 2002.
(6) The default indoor air exchange rate is 1.0 hr^{-1} for industrial structures (DTSC 2005).
(7) Default value from DTSC 2005.
(8) Based on DTSC (2005) default value, adjusted for the area of the building footprint.

References:

Department of Toxic Substances Control (DTSC). 2003. "Johnson and Ettinger (1991) Model for Vapor Intrusion Into Buildings." Version 3.0-Modification 1. July.

DTSC. 2005. "Guidance for the Evaluation and Migration of Subsurface Vapor Intrusion to Indoor Air." Interim Final. California Environmental Protection Agency. February 7. On-Line Address: http://www.dtsc.ca.gov/ScienceTechnology/HERD_POL_Eval_Subsurface_Vapor_Intrusion_interim_final.pdf

U.S. Environmental Protection Agency (EPA). 2002. "Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)." Draft Federal Register. November 29. On-Line Address: http://www.epa.gov/correctiveaction/eis/vapor.htm

TABLE 19: CANCER RISK AND NONCANCER HAZARD SUMMARY FOR COMMERCIAL/INDUSTRIAL RECEPTOR, SEPTEMBER 2006 SAMPLING EVENT

Technical Memorandum, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398, Alameda Point, Alameda, California

Building	Chemicals of Potential Concern in Soil Gas	Exposure Point Concentration (mg/m^3)	Attenuation Factor[a]	Indoor Air Concentration[a] ($\mu g/m^3$)	Toxicity Values: Inhalation Cancer Slope Factor [$(mg/kg\text{-}d)^{-1}$]	Toxicity Values: Inhalation Reference Dose [mg/kg-d]	Risk Estimates: Cancer Risk	Risk Estimates: Hazard Index
14	1,2,4-Trimethylbenzene	5.64E+02	0.00028	1.6E-01	--	1.7E-03	--	1E-02
	1,3,5-Trimethylbenzene	1.81E+02	0.00028	5.1E-02	--	1.7E-03	--	4E-03
	1,4-Dioxane	2.12E+01	0.00030	6.3E-03	1.1E-02	--	3E-09	--
	2-Butanone	2.68E+01	0.00029	7.7E-03	--	1.4E+00	--	7E-07
	4-Ethyl Toluene[c]	1.91E+02	0.00028	5.4E-02	--	1.4E+00	--	5E-06
	4-Methyl-2-pentanone	1.09E+01	0.00029	3.2E-03	--	8.6E-01	--	5E-07
	Acetone	1.40E+03	0.00030	4.2E-01	--	9.0E-01	--	6E-05
	Carbon disulfide	1.04E+01	0.00030	3.1E-03	--	2.0E-01	--	2E-06
	Chloroform	1.17E+01	0.00030	3.5E-03	8.1E-02	1.4E-02	1E-08	3E-05
	Cyclohexane[d]	1.20E+01	0.00031	3.8E-03	--	5.7E-02	--	9E-06
	Ethylbenzene	3.79E+01	0.00029	1.1E-02	--	2.9E-01	--	5E-06
	Heptane[d]	1.12E+01	0.00031	3.5E-03	--	5.7E-02	--	8E-06
	Hexane	3.90E+00	0.00031	1.2E-03	--	5.7E-02	--	3E-06
	Isopropylbenzene	2.84E+01	0.00028	8.1E-03	--	1.1E-01	--	1E-05
	Methylene chloride	9.78E+00	0.00030	2.9E-03	1.6E-03	8.6E-01	2E-10	5E-07
	Tetrachloroethene	1.42E+02	0.00029	4.1E-02	2.1E-02	1.0E-02	4E-08	6E-04
	Toluene	2.27E+01	0.00029	6.7E-03	--	1.4E+00	--	6E-07
	Trichloroethene	1.12E+02	0.00029	3.3E-02	4.0E-01	1.0E-02	6E-07	4E-04
	Trichlorofluoromethane	1.68E+01	0.00029	4.9E-03	--	2.0E-01	--	3E-06
	Trichlorotrifluoroethane	4.67E+01	0.00029	1.4E-02	--	8.6E+00	--	2E-07
	m,p-Xylene	1.84E+02	0.00029	5.3E-02	--	2.9E-02	--	3E-04
	n-Propylbenzene	6.00E+01	0.00028	1.7E-02	--	4.0E-02	--	6E-05
	o-Xylene	1.02E+02	0.00029	3.0E-02	--	2.9E-02	--	1E-04
						Total	**7E-07**	**2E-02**
113	1,1,1-Trichloroethane	6.40E+01	0.00030	1.9E-02	--	6.3E-01	--	4E-06
	2-Butanone	3.30E+01	0.00030	9.8E-03	--	1.4E+00	--	9E-07
	Acetone	1.20E+02	0.00031	3.7E-02	--	9.0E-01	--	6E-06
	Tetrachloroethene	2.40E+02	0.00029	7.1E-02	2.1E-02	1.0E-02	7E-08	1E-03
	Tetrahydrofuran	1.80E+01	0.00030	5.5E-03	6.8E-03	8.6E-02	2E-09	9E-06
	Trichloroethene	2.70E+03	0.00030	8.0E-01	4.0E-01	1.0E-02	2E-05	1E-02
						Total	**2E-05**	**1E-02**

TABLE 19: CANCER RISK AND NONCANCER HAZARD SUMMARY FOR COMMERCIAL/INDUSTRIAL RECEPTOR, SEPTEMBER 2006 SAMPLING EVENT (CONTINUED)

Technical Memorandum, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398, Alameda Point, Alameda, California

Building	Chemicals of Potential Concern in Soil Gas	Exposure Point Concentration (mg/m^3)	Attenuation Factor[a]	Indoor Air Concentration[a] (µg/m^3)	Toxicity Values: Inhalation Cancer Slope Factor [(mg/kg-d)$^{-1}$]	Toxicity Values: Inhalation Reference Dose [mg/kg-d]	Risk Estimates: Cancer Risk	Risk Estimates: Hazard Index
162	1,1,1-Trichloroethane	3.63E+01	0.00044	1.6E-02	--	6.3E-01	--	3E-06
	1,2,4-Trimethylbenzene	6.92E+00	0.00043	3.0E-03	--	1.7E-03	--	2E-04
	2-Butanone	1.56E+01	0.00044	6.9E-03	--	1.4E+00	--	7E-07
	4-Ethyl Toluene[c]	4.90E+00	0.00045	2.2E-03	--	1.4E+00	--	2E-07
	4-Methyl-2-pentanone	6.72E+00	0.00044	3.0E-03	--	8.6E-01	--	5E-07
	Acetone	4.46E+01	0.00046	2.0E-02	--	9.0E-01	--	3E-06
	Carbon disulfide	4.48E+01	0.00045	2.0E-02	--	2.0E-01	--	1E-05
	Chloroform	5.14E+01	0.00045	2.3E-02	8.1E-02	1.4E-02	9E-08	2E-04
	Hexane	5.64E+00	0.00047	2.7E-03	--	5.7E-02	--	6E-06
	Methylene chloride	3.86E+01	0.00045	1.7E-02	1.6E-03	8.6E-01	1E-09	3E-06
	Tetrachloroethene	4.79E+01	0.00044	2.1E-02	2.1E-02	1.0E-02	2E-08	3E-04
	Tetrahydrofuran	1.82E+01	0.00045	8.2E-03	6.8E-03	8.6E-02	3E-09	1E-05
	Toluene	1.38E+01	0.00045	6.2E-03	--	1.4E+00	--	6E-07
	Trichloroethene	6.03E+03	0.00044	2.7E+00	4.0E-01	1.0E-02	5E-05	4E-02
	Trichlorofluoromethane	2.82E+01	0.00045	1.3E-02	--	2.0E-01	--	9E-06
	Trichlorotrifluoroethane	2.22E+02	0.00044	9.8E-02	--	8.6E+00	--	2E-06
	cis-1,2-Dichloroethene	1.30E+01	0.00044	5.7E-03	--	1.0E-02	--	8E-05
	m,p-Xylene	6.06E+00	0.00044	2.7E-03	--	2.9E-02	--	1E-05
	trans-1,2-Dichloroethene	1.08E+01	0.00044	4.7E-03	--	2.0E-02	--	3E-05
						Total	**5E-05**	**4E-02**
163A	1,1,1-Trichloroethane	4.70E+01	0.00035	1.6E-02	--	6.3E-01	--	4E-06
	1,1-Dichloroethane	2.00E+01	0.00035	7.0E-03	--	1.4E-01	--	7E-06
	Toluene	1.60E+01	0.00035	5.6E-03	--	1.4E+00	--	5E-07
	Trichloroethene	1.20E+05	0.00035	4.2E+01	4.0E-01	1.0E-02	8E-04	6E-01
	Trichlorotrifluoroethane	3.50E+01	0.00035	1.2E-02	--	8.6E+00	--	2E-07
	cis-1,2-Dichloroethene	4.00E+04	0.00035	1.4E+01	--	1.0E-02	--	2E-01
	trans-1,2-Dichloroethene	1.90E+03	0.00035	6.6E-01	--	2.0E-02	--	5E-03
						Total	**8E-04**	**8E-01**

TABLE 19: CANCER RISK AND NONCANCER HAZARD SUMMARY FOR COMMERCIAL/INDUSTRIAL RECEPTOR, SEPTEMBER 2006 SAMPLING EVENT (CONTINUED)

Technical Memorandum, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398, Alameda Point, Alameda, California

Building	Chemicals of Potential Concern in Soil Gas	Exposure Point Concentration (mg/m^3)	Attenuation Factor[a]	Indoor Air Concentration[a] ($\mu g/m^3$)	Toxicity Values: Inhalation Cancer Slope Factor [$(mg/kg\text{-}d)^{-1}$]	Toxicity Values: Inhalation Reference Dose [mg/kg-d]	Risk Estimates: Cancer Risk	Risk Estimates: Hazard Index
398	1,1,1-Trichloroethane	4.11E+01	0.00064	2.6E-02	--	6.3E-01	--	6E-06
	2-Butanone	2.58E+01	0.00064	1.7E-02	--	1.4E+00	--	2E-06
	4-Methyl-2-pentanone	7.38E+01	0.00064	4.7E-02	--	8.6E-01	--	8E-06
	Acetone	1.04E+02	0.00066	6.9E-02	--	9.0E-01	--	1E-05
	Carbon disulfide	3.80E+00	0.00066	2.5E-03	--	2.0E-01	--	2E-06
	Chloroform	1.30E+01	0.00066	8.5E-03	8.1E-02	1.4E-02	3E-08	8E-05
	Cyclohexane[d]	4.90E+00	0.00068	3.3E-03	--	5.7E-02	--	8E-06
	Dichlorodifluoromethane	7.70E+00	0.00063	4.9E-03	--	5.7E-02	--	1E-05
	Ethylbenzene	5.00E+00	0.00064	3.2E-03	--	2.9E-01	--	2E-06
	Hexane	1.08E+01	0.00068	7.3E-03	--	5.7E-02	--	2E-05
	Methylene chloride	6.10E+00	0.00066	4.0E-03	1.6E-03	8.6E-01	3E-10	6E-07
	Tetrachloroethene	8.61E+01	0.00064	5.5E-02	2.1E-02	1.0E-02	6E-08	8E-04
	Tetrahydrofuran	1.56E+01	0.00066	1.0E-02	6.8E-03	8.6E-02	3E-09	2E-05
	Toluene	2.60E+01	0.00065	1.7E-02	--	1.4E+00	--	2E-06
	Trichloroethene	7.00E+02	0.00064	4.5E-01	4.0E-01	1.0E-02	9E-06	6E-03
	Trichlorotrifluoroethane	1.80E+01	0.00064	1.2E-02	--	8.6E+00	--	2E-07
	m,p-Xylene	1.10E+01	0.00064	7.1E-03	--	2.9E-02	--	3E-05
	o-Xylene	4.70E+00	0.00065	3.0E-03	--	2.9E-02	--	1E-05
						Total	**9E-06**	**7E-03**

Notes:

a Attentuatio factor is calculated per building using DTSC's 2003 Vapor Intrusion Model (DTSC 2003), which is based upon Johnson and Ettinger (1991). Indoor air concentration is calculated using the following equation: Indoor air concentration = Attenuation factor (α) x Soil gas concentration.

b 1,3,5-Trimethylbenzene used as a surrogate.

c Toluene used as a surrogate.

d Hexane used as a surrogate.

-- Not available

$\mu g/m^3$ Microgram per cubic meter

mg/kg-d Milligram per kilogram per day

Reference:

Department of Toxic Substances Control (DTSC). 2003. "Johnson and Ettinger (1991) Model for Vapor Intrusion Into Buildings." Version 3.0-Modification 1. July.

TABLE 20: CANCER RISK AND NONCANCER HAZARD SUMMARY FOR COMMERCIAL/INDUSTRIAL RECEPTOR, MARCH 2007 SAMPLING EVENT

Technical Memorandum, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398, Alameda Point, Alameda, California

					Toxicity Values		Risk Estimates	
Building	**Chemicals of Potential Concern in Soil Gas**	**Exposure Point Concentration (µg/m³)**	**Attenuation Factor[a]**	**Indoor Air Concentration[a] (µg/m³)**	**Inhalation Cancer Slope Factor [(mg/kg-d)⁻¹]**	**Inhalation Reference Dose [mg/kg-d]**	**Cancer Risk**	**Hazard Index**
163A	1,1-Dichloroethane	1.30E+01	0.00035	4.5E-03	--	1.4E-01	--	4E-06
	Acetone	4.20E+01	0.00036	1.5E-02	--	9.0E-01	--	2E-06
	Ethylbenzene	1.20E+01	0.00035	4.2E-03	--	2.9E-01	--	2E-06
	Tetrachloroethene	1.80E+02	0.00035	6.2E-02	2.1E-02	1.0E-02	6E-08	9E-04
	Toluene	1.60E+02	0.00035	5.6E-02	--	1.4E+00	--	5E-06
	Trichloroethene	2.60E+04	0.00035	9.1E+00	4.0E-01	1.0E-02	2E-04	1E-01
	cis-1,2-Dichloroethene	1.20E+04	0.00035	4.2E+00	--	1.0E-02	--	6E-02
	trans-1,2-Dichloroethene	4.70E+02	0.00035	1.6E-01	--	2.0E-02	--	1E-03
	m,p-Xylene	1.50E+01	0.00035	5.2E-03	--	2.9E-02	--	2E-05
						Total	**2E-04**	**2E-01**

Notes:

a Attenuation factor is calculated per building using DTSC's 2003 Vapor Intrusion Model (DTSC 2003), which is based upon Johnson and Ettinger (1991). Indoor air concentration is calculated using the following equation: Indoor air concentration = Attenuation factor (α) x Soil gas concentration.

-- Not available

µg/m³ Microgram per cubic meter

mg/kg-d Milligram per kilogram per day

Reference:

Department of Toxic Substances Control (DTSC). 2003. "Johnson and Ettinger (1991) Model for Vapor Intrusion Into Buildings." Version 3.0-Modification 1. July.

APPENDIX A
SEPTEMBER 2006 AND MARCH 2007 SAMPLING RESULTS

TABLE A-1: SEPTEMBER 2006 SOIL GAS ANALYTICAL RESULTS

Building 14 Alameda Point, Alameda, California

Sample Location ID	014SG-01	014SG-02	014SG-03	014SG-04	014SG-05	014SG-06	014SG-08
Sample ID	14SG01-003	14SG02-003	14SG03-003	14SG04-003	14SG05-003	14SG06-003	14SG08-003
Sample Date	09/26/2006	09/26/2006	09/26/2006	09/26/2006	09/26/2006	09/26/2006	09/26/2006
Matrix	AIR	AIR	AIR	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)							
1,1,1-TRICHLOROETHANE	7.3 U	5.7 U	13 U	6.7 U	5.5 U	5.5 U	5.5 U
1,1,2,2-TETRACHLOROETHANE	9.2 U	7.2 U	17 U	8.5 U	6.9 U	6.9 U	6.9 U
1,1,2-TRICHLOROETHANE	7.3 U	5.7 U	13 U	6.7 U	5.5 U	5.5 U	5.5 U
1,1-DICHLOROETHANE	5.4 U	4.2 U	10 U	5 U	4.1 U	4.1 U	4.1 U
1,1-DICHLOROETHENE	5.3 U	4.1 U	9.8 U	4.9 U	4 U	4 U	4 U
1,2,4-TRICHLOROBENZENE	40 U	31 U	73 U	37 U	30 U	30 U	30 U
1,2,4-TRIMETHYLBENZENE	**16**	**140**	**1,800**	**50**	5 U	5 U	**10**
1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE	9.4 U	7.3 U	17 U	8.6 U	7.1 U	7.1 U	7.1 U
1,2-DICHLOROBENZENE	8.1 U	6.3 U	15 U	7.4 U	6.1 U	6.1 U	6.1 U
1,2-DICHLOROETHANE	5.4 UJ	4.2 UJ	10 UJ	5 UJ	4.1 UJ	4.1 UJ	4.1 UJ
1,2-DICHLOROPROPANE	6.2 U	4.8 U	11 U	5.7 U	4.7 U	4.7 U	4.7 U
1,3,5-TRIMETHYLBENZENE	**12**	**54**	**500**	**47**	5 U	5 U	**19**
1,3-BUTADIENE	3 U	2.3 U	5.5 U	2.7 U	2.2 U	2.2 U	2.2 U
1,3-DICHLOROBENZENE	8.1 U	6.3 U	15 U	7.4 U	6.1 U	6.1 U	6.1 U
1,4-DICHLOROBENZENE	8.1 U	6.3 U	15 U	7.4 U	6.1 U	6.1 U	6.1 U
1,4-DIOXANE	19 U	15 U	36 U	18 U	14 U	14 U	14 U
2,2,4-TRIMETHYLPENTANE	6.3 U	4.9 U	12 U	5.8 U	4.7 U	4.7 U	4.7 U
2-BUTANONE	**11 J**	**3.9 J**	7.3 UJ	**42 J**	**27 J**	**7.8 J**	**9.7 J**
2-HEXANONE	22 U	17 U	40 U	20 U	16 U	16 U	16 U
3-CHLOROPROPENE	17 U	13 U	31 U	15 U	13 U	13 U	13 U
4-ETHYL TOLUENE	**8.8**	**31**	**610**	**16**	5 U	5 U	**7.2**
4-METHYL-2-PENTANONE	5.5 U	4.3 U	10 U	**6.4**	4.1 U	4.1 U	**7.8**
ACETONE	**110**	**25**	**39**	**1,400**	**81**	**38**	**40**
BENZENE	4.3 U	3.3 U	7.9 U	3.9 U	3.2 U	3.2 U	3.2 U
BENZYL CHLORIDE	7 U	5.4 U	13 U	6.4 U	5.2 U	5.2 U	5.2 U
BROMODICHLOROMETHANE	9 U	7 U	16 U	8.3 U	6.8 U	6.8 U	6.8 U
BROMOFORM	14 U	11 U	26 U	13 U	10 U	10 U	10 U
BROMOMETHANE	5.2 U	4 U	9.6 U	4.8 U	3.9 U	3.9 U	3.9 U
CARBON DISULFIDE	**6.6**	**3.7**	7.7 U	3.8 U	3.1 U	**15**	3.1 U
CARBON TETRACHLORIDE	8.5 U	6.6 U	16 U	7.8 U	6.4 U	6.4 U	6.4 U
CHLOROBENZENE	6.2 U	4.8 U	11 U	5.7 U	4.6 U	4.6 U	4.6 U
CHLOROETHANE	3.5 U	2.8 U	6.5 U	3.2 U	2.7 U	2.7 U	2.7 U
CHLOROFORM	**7.4**	**13**	12 U	6 U	4.9 U	4.9 U	4.9 U
CHLOROMETHANE	11 U	8.6 U	20 U	10 U	8.3 U	8.3 U	8.3 U
CIS-1,2-DICHLOROETHENE	5.3 U	4.1 U	9.8 U	4.9 U	4 U	4 U	4 U
CIS-1,3-DICHLOROPROPENE	6.1 U	4.7 U	11 U	5.6 U	4.6 U	4.6 U	4.6 U

TABLE A-1: SEPTEMBER 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 14 Alameda Point, Alameda, California

Sample Location ID	014SG-01	014SG-02	014SG-03	014SG-04	014SG-05	014SG-06	014SG-08
Sample ID	14SG01-003	14SG02-003	14SG03-003	14SG04-003	14SG05-003	14SG06-003	14SG08-003
Sample Date	09/26/2006	09/26/2006	09/26/2006	09/26/2006	09/26/2006	09/26/2006	09/26/2006
Matrix	AIR	AIR	AIR	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)							
CYCLOHEXANE	4.6 U	**19**	8.5 U	4.2 U	3.5 U	3.5 U	3.5 U
DIBROMOCHLOROMETHANE	11 U	8.9 U	21 U	10 U	8.6 U	8.6 U	8.6 U
DICHLORODIFLUOROMETHANE	6.6 U	5.2 U	12 U	6.1 U	5 U	5 U	5 U
ETHANOL	**10**	7.9 U	19 U	**32**	7.6 U	7.6 U	7.6 U
ETHYLBENZENE	**8.9**	**11**	**110**	**9.6**	4.4 U	4.4 U	**6**
ETHYLENE DIBROMIDE	10 U	8 U	19 U	9.5 U	7.8 U	7.8 U	7.8 U
HEPTANE	5.5 U	**12**	**11**	5.1 U	4.1 U	4.1 U	4.1 U
HEXACHLOROBUTADIENE	57 U	44 U	100 U	53 U	43 U	43 U	43 U
HEXANE	4.7 U	**3.9**	8.7 U	4.4 U	3.6 U	3.6 U	3.6 U
ISOPROPYL ALCOHOL	**67**	10 U	24 U	**370**	**9.9**	**680**	**990**
ISOPROPYLBENZENE	6.6 U	**5.2**	**52**	6.1 U	5 U	5 U	5 U
M,P-XYLENE	**25**	**26**	**570**	**30**	4.4 U	4.4 U	**16**
METHYL-T-BUTYL ETHER	4.8 U	3.8 U	8.9 U	4.4 U	3.6 U	3.6 U	3.6 U
METHYLENE CHLORIDE	4.7 U	**17**	8.6 U	4.3 U	3.5 U	3.5 U	**3.9**
N-PROPYLBENZENE	**7.3**	**16**	**180**	**8.4**	5 U	5 U	5 U
NAPHTHALENE	28 U	22 U	52 U	26 U	21 U	21 U	21 U
O-XYLENE	**22**	**18**	**300**	**46**	4.4 U	4.4 U	**9.7**
STYRENE	5.7 U	4.4 U	10 U	5.3 U	4.3 U	4.3 U	4.3 U
TETRACHLOROETHENE	**19**	**43**	**300**	**110**	**13**	6.8 U	**170**
TETRAHYDROFURAN	4 U	3.1 U	7.3 U	3.6 U	3 U	3 U	3 U
TOLUENE	**12**	**20**	**37**	**10**	**3.8**	**5.5**	**27**
TRANS-1,2-DICHLOROETHENE	5.3 U	4.1 U	9.8 U	4.9 U	4 U	4 U	4 U
TRANS-1,3-DICHLOROPROPENE	6.1 U	4.7 U	11 U	5.6 U	4.6 U	4.6 U	4.6 U
TRICHLOROETHENE	**44**	**180**	**51**	**89**	**140**	5.4 U	5.4 U
TRICHLOROFLUOROMETHANE	**8.1**	**29**	14 U	6.9 U	5.7 U	5.7 U	5.7 U
TRICHLOROTRIFLUOROETHANE	10 U	**53**	**59**	**21**	7.7 U	7.7 U	7.7 U
VINYL CHLORIDE	3.4 U	2.7 U	6.3 U	3.2 U	2.6 U	2.6 U	2.6 U

TABLE A-1: SEPTEMBER 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 14 Alameda Point, Alameda, California

Sample Location ID	014SG-09	014SG-10	014SG-11
Sample ID	14SG09-003	14SG10-003	14SG11-003
Sample Date	09/26/2006	09/26/2006	09/26/2006
Matrix	AIR	AIR	AIR
EPA TO-15 (UG/M3)			
1,1,1-TRICHLOROETHANE	6.1 U	6.2 U	5.7 U
1,1,2,2-TETRACHLOROETHANE	7.7 U	7.9 U	7.2 U
1,1,2-TRICHLOROETHANE	6.1 U	6.2 U	5.7 U
1,1-DICHLOROETHANE	4.5 U	4.6 U	4.2 U
1,1-DICHLOROETHENE	4.4 U	4.5 U	4.1 U
1,2,4-TRICHLOROBENZENE	33 U	34 U	31 U
1,2,4-TRIMETHYLBENZENE	**160**	5.6 U	5.1 U
1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE	7.8 U	8 U	7.3 U
1,2-DICHLOROBENZENE	6.7 U	6.9 U	6.3 U
1,2-DICHLOROETHANE	4.5 UJ	4.6 UJ	4.2 UJ
1,2-DICHLOROPROPANE	5.2 U	5.3 U	4.8 U
1,3,5-TRIMETHYLBENZENE	**50**	5.6 U	5.1 U
1,3-BUTADIENE	2.5 U	2.5 U	2.3 U
1,3-DICHLOROBENZENE	6.7 U	6.9 U	6.3 U
1,4-DICHLOROBENZENE	6.7 U	6.9 U	6.3 U
1,4-DIOXANE	16 U	16 U	**23**
2,2,4-TRIMETHYLPENTANE	5.2 U	5.3 U	4.9 U
2-BUTANONE	**5.8 J**	**34 J**	**4.8 J**
2-HEXANONE	18 U	19 U	17 U
3-CHLOROPROPENE	14 U	14 U	13 U
4-ETHYL TOLUENE	**42**	5.6 U	5.1 U
4-METHYL-2-PENTANONE	4.6 U	**16**	4.3 U
ACETONE	**25**	**110**	**22**
BENZENE	3.6 U	3.6 U	3.3 U
BENZYL CHLORIDE	5.8 U	5.9 U	5.4 U
BROMODICHLOROMETHANE	7.5 U	7.7 U	7 U
BROMOFORM	12 U	12 U	11 U
BROMOMETHANE	4.3 U	4.4 U	4 U
CARBON DISULFIDE	3.5 U	3.6 U	**7.8**
CARBON TETRACHLORIDE	7 U	7.2 U	6.6 U
CHLOROBENZENE	5.2 U	5.3 U	4.8 U
CHLOROETHANE	3 U	3 U	2.8 U
CHLOROFORM	**9.5**	**12**	5.1 U
CHLOROMETHANE	9.2 U	9.4 U	8.6 U
CIS-1,2-DICHLOROETHENE	4.4 U	4.5 U	4.1 U
CIS-1,3-DICHLOROPROPENE	5.1 U	5.2 U	4.7 U

TABLE A-1: SEPTEMBER 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 14 Alameda Point, Alameda, California

Sample Location ID	014SG-09	014SG-10	014SG-11
Sample ID	14SG09-003	14SG10-003	14SG11-003
Sample Date	09/26/2006	09/26/2006	09/26/2006
Matrix	AIR	AIR	AIR
EPA TO-15 (UG/M3)			
CYCLOHEXANE	3.8 U	3.9 U	3.6 U
DIBROMOCHLOROMETHANE	9.5 U	9.8 U	8.9 U
DICHLORODIFLUOROMETHANE	5.5 U	5.7 U	5.2 U
ETHANOL	8.4 U	8.6 U	7.9 U
ETHYLBENZENE	4.9 U	5 U	4.5 U
ETHYLENE DIBROMIDE	8.6 U	8.8 U	8 U
HEPTANE	4.6 U	4.7 U	4.3 U
HEXACHLOROBUTADIENE	48 U	49 U	44 U
HEXANE	3.9 U	4 U	3.7 U
ISOPROPYL ALCOHOL	**90**	**19**	10 U
ISOPROPYLBENZENE	5.5 U	5.6 U	5.1 U
M,P-XYLENE	**13**	5 U	4.5 U
METHYL-T-BUTYL ETHER	4 U	4.1 U	3.8 U
METHYLENE CHLORIDE	3.9 U	4 U	3.6 U
N-PROPYLBENZENE	**12**	5.6 U	5.1 U
NAPHTHALENE	23 U	24 U	22 U
O-XYLENE	**7.3**	5 U	4.5 U
STYRENE	4.8 U	4.9 U	4.4 U
TETRACHLOROETHENE	7.6 U	7.8 U	7.1 U
TETRAHYDROFURAN	3.3 U	3.4 U	3.1 U
TOLUENE	**5**	4.3 U	**5.3**
TRANS-1,2-DICHLOROETHENE	4.4 U	4.5 U	4.1 U
TRANS-1,3-DICHLOROPROPENE	5.1 U	5.2 U	4.7 U
TRICHLOROETHENE	6 U	6.2 U	5.6 U
TRICHLOROFLUOROMETHANE	6.3 U	6.4 U	5.9 U
TRICHLOROTRIFLUOROETHANE	8.6 U	8.8 U	8 U
VINYL CHLORIDE	2.9 U	2.9 U	2.7 U

Notes: Detected analytes are printed in bold.

ID	Identification
J	Estimated value
U	Nondetected
UG/M3	Micrograms per cubic meter

TABLE A-2: SEPTEMBER 2006 SOIL GAS ANALYTICAL RESULTS

Building 113 Alameda Point, Alameda, California

Sample Location ID	113SG-01	113SG-02	113SG-03	113SG-03
Sample ID	113SG01-003	113SG02-003	113SG03-003	113SG03-004
Sample Date	09/28/2006	09/28/2006	09/26/2006	09/26/2006
Matrix	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)				
1,1,1-TRICHLOROETHANE	**6**	**9.2**	**64**	**63**
1,1,2,2-TETRACHLOROETHANE	6.8 U	6.8 U	9.2 U	9.2 U
1,1,2-TRICHLOROETHANE	5.4 U	5.4 U	7.3 U	7.3 U
1,1-DICHLOROETHANE	4 U	4 U	5.4 U	5.4 U
1,1-DICHLOROETHENE	3.9 U	3.9 U	5.3 U	5.3 U
1,2,4-TRICHLOROBENZENE	30 U	30 U	40 U	40 U
1,2,4-TRIMETHYLBENZENE	4.9 U	4.9 U	6.6 U	6.6 U
1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE	7 U	7 U	9.4 U	9.4 U
1,2-DICHLOROBENZENE	6 U	6 U	8.1 U	8.1 U
1,2-DICHLOROETHANE	4 UJ	4 UJ	5.4 UJ	5.4 UJ
1,2-DICHLOROPROPANE	4.6 U	4.6 U	6.2 U	6.2 U
1,3,5-TRIMETHYLBENZENE	4.9 U	4.9 U	6.6 U	6.6 U
1,3-BUTADIENE	2.2 U	2.2 U	3 U	3 U
1,3-DICHLOROBENZENE	6 U	6 U	8.1 U	8.1 U
1,4-DICHLOROBENZENE	6 U	6 U	8.1 U	8.1 U
1,4-DIOXANE	14 U	14 U	19 U	19 U
2,2,4-TRIMETHYLPENTANE	4.6 U	4.6 U	6.3 U	6.3 U
2-BUTANONE	**6.6**	**5.9**	**33 J**	**7.4 J**
2-HEXANONE	16 U	16 U	22 U	22 U
3-CHLOROPROPENE	12 U	12 U	17 U	17 U
4-ETHYL TOLUENE	4.9 U	4.9 U	6.6 U	6.6 U
4-METHYL-2-PENTANONE	4.1 U	4.1 U	5.5 U	5.5 U
ACETONE	**16**	**16**	**120**	**29**
BENZENE	3.2 U	3.2 U	4.3 U	4.3 U
BENZYL CHLORIDE	5.2 U	5.2 U	7 U	7 U
BROMODICHLOROMETHANE	6.7 U	6.7 U	9 U	9 U
BROMOFORM	10 U	10 U	14 U	14 U
BROMOMETHANE	3.9 U	3.9 U	5.2 U	5.2 U
CARBON DISULFIDE	3.1 U	3.1 U	4.2 U	4.2 U
CARBON TETRACHLORIDE	6.3 U	6.3 U	8.5 U	8.5 U
CHLOROBENZENE	4.6 U	4.6 U	6.2 U	6.2 U
CHLOROETHANE	2.6 U	2.6 U	3.5 U	3.5 U
CHLOROFORM	4.8 U	4.8 U	6.6 U	6.6 U
CHLOROMETHANE	8.2 U	8.2 U	11 U	11 U
CIS-1,2-DICHLOROETHENE	3.9 U	3.9 U	5.3 U	5.3 U
CIS-1,3-DICHLOROPROPENE	4.5 U	4.5 U	6.1 U	6.1 U

TABLE A-2: SEPTEMBER 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 113 Alameda Point, Alameda, California

Sample Location ID	113SG-01	113SG-02	113SG-03	113SG-03
Sample ID	113SG01-003	113SG02-003	113SG03-003	113SG03-004
Sample Date	09/28/2006	09/28/2006	09/26/2006	09/26/2006
Matrix	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)				
CYCLOHEXANE	3.4 U	3.4 U	4.6 U	4.6 U
DIBROMOCHLOROMETHANE	8.5 U	8.5 U	11 U	11 U
DICHLORODIFLUOROMETHANE	4.9 U	4.9 U	6.6 U	6.6 U
ETHANOL	7.5 U	7.5 U	10 U	10 U
ETHYLBENZENE	4.3 U	4.3 U	5.8 U	5.8 U
ETHYLENE DIBROMIDE	7.6 U	7.6 U	10 U	10 U
HEPTANE	4.1 U	4.1 U	5.5 U	5.5 U
HEXACHLOROBUTADIENE	42 U	42 U	57 U	57 U
HEXANE	3.5 U	3.5 U	4.7 U	4.7 U
ISOPROPYL ALCOHOL	**970**	**1,400**	**64**	**79**
ISOPROPYLBENZENE	4.9 U	4.9 U	6.6 U	6.6 U
M,P-XYLENE	4.3 U	4.3 U	5.8 U	5.8 U
METHYL-T-BUTYL ETHER	3.6 U	3.6 U	4.8 U	4.8 U
METHYLENE CHLORIDE	3.4 U	3.4 U	4.7 U	4.7 U
N-PROPYLBENZENE	4.9 U	4.9 U	6.6 U	6.6 U
NAPHTHALENE	21 U	21 U	28 U	28 U
O-XYLENE	4.3 U	4.3 U	5.8 U	5.8 U
STYRENE	4.2 U	4.2 U	5.7 U	5.7 U
TETRACHLOROETHENE	6.7 U	**10**	**240**	**240**
TETRAHYDROFURAN	**15 J**	**18 J**	**9.5**	4 U
TOLUENE	3.7 U	3.7 U	5.1 U	**7**
TRANS-1,2-DICHLOROETHENE	3.9 U	3.9 U	5.3 U	5.3 U
TRANS-1,3-DICHLOROPROPENE	4.5 U	4.5 U	6.1 U	6.1 U
TRICHLOROETHENE	**21**	**54**	**2,700**	**2,800**
TRICHLOROFLUOROMETHANE	5.6 U	5.6 U	7.6 U	7.6 U
TRICHLOROTRIFLUOROETHANE	7.6 U	7.6 U	10 U	10 U
VINYL CHLORIDE	2.5 U	2.5 U	3.4 U	3.4 U

Notes: Detected analytes are printed in bold.

ID Identification
J Estimated value
U Nondetected
UG/M3 Micrograms per cubic meter

TABLE A-3: SEPTEMBER 2006 SOIL GAS ANALYTICAL RESULTS

Building 162 Alameda Point, Alameda, California

Sample Location ID	162SG-01	162SG-02	162SG-03	162SG-04	162SG-05	162SG-06	162SG-06
Sample ID	162SG01-003	162SG02-003	162SG03-003	162SG04-003	162SG05-003	162SG06-003	162SG06-004
Sample Date	09/27/2006	09/28/2006	09/28/2006	09/28/2006	09/27/2006	09/27/2006	09/27/2006
Matrix	AIR	AIR	AIR	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)							
1,1,1-TRICHLOROETHANE	**51**	**6.1**	**34**	**9.7**	5.5 U	**30**	**32**
1,1,2,2-TETRACHLOROETHANE	27 U	6.6 U	19 U	7 U	6.9 U	14 U	14 U
1,1,2-TRICHLOROETHANE	21 U	5.3 U	15 U	5.6 U	5.5 U	11 U	11 U
1,1-DICHLOROETHANE	16 U	3.9 U	11 U	4.1 U	4.1 U	8 U	8.2 U
1,1-DICHLOROETHENE	16 U	3.8 U	11 U	4.1 U	4 U	7.9 U	8 U
1,2,4-TRICHLOROBENZENE	120 U	29 U	84 U	30 U	30 U	59 U	60 U
1,2,4-TRIMETHYLBENZENE	19 UJ	4.8 U	14 U	5 U	**7 J**	9.8 UJ	9.9 UJ
1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE	28 U	6.8 U	20 U	7.2 U	7.1 U	14 U	14 U
1,2-DICHLOROBENZENE	24 U	5.8 U	17 U	6.2 U	6.1 U	12 U	12 U
1,2-DICHLOROETHANE	16 U	3.9 UJ	11 UJ	4.1 UJ	4.1 U	8 U	8.2 U
1,2-DICHLOROPROPANE	18 U	4.5 U	13 U	4.7 U	4.7 U	9.2 U	9.3 U
1,3,5-TRIMETHYLBENZENE	19 U	4.8 U	14 U	5 U	5 U	9.8 U	9.9 U
1,3-BUTADIENE	8.7 U	2.1 U	6.2 U	2.3 U	2.2 U	4.4 U	4.5 U
1,3-DICHLOROBENZENE	24 U	5.8 U	17 U	6.2 U	6.1 U	12 U	12 U
1,4-DICHLOROBENZENE	24 U	5.8 U	17 U	6.2 U	6.1 U	12 U	12 U
1,4-DIOXANE	57 U	14 U	40 U	15 U	14 U	29 U	29 U
2,2,4-TRIMETHYLPENTANE	18 U	4.5 U	13 U	4.8 U	4.7 U	9.3 U	9.4 U
2-BUTANONE	12 U	**17**	8.3 U	**9.1**	**34**	5.9 U	6 U
2-HEXANONE	64 U	16 U	46 U	17 U	16 U	33 U	33 U
3-CHLOROPROPENE	49 U	12 U	35 U	13 U	13 U	25 U	25 U
4-ETHYL TOLUENE	19 U	4.8 U	14 U	5 U	5 U	9.8 U	9.9 U
4-METHYL-2-PENTANONE	16 U	4 U	12 U	4.2 U	**8.2**	8.2 U	8.3 U
ACETONE	37 U	**49**	27 U	**15**	**98**	19 U	19 U
BENZENE	12 U	3.1 U	9 U	3.3 U	3.2 U	6.4 U	6.4 U
BENZYL CHLORIDE	20 U	5 U	14 U	5.3 U	5.2 U	10 U	10 U
BROMODICHLOROMETHANE	26 U	6.5 U	19 U	6.9 U	6.8 U	13 U	14 U
BROMOFORM	41 U	10 U	29 U	10 U	10 U	20 U	21 U
BROMOMETHANE	15 U	3.8 U	11 U	4 U	3.9 U	7.7 U	7.8 U
CARBON DISULFIDE	12 U	3 U	8.8 U	**6**	3.1 U	6.2 U	6.3 U
CARBON TETRACHLORIDE	25 U	6.1 U	18 U	6.4 U	6.4 U	12 U	13 U
CHLOROBENZENE	18 U	4.5 U	13 U	4.7 U	4.6 U	9.2 U	9.3 U
CHLOROETHANE	10 U	2.6 U	7.4 U	2.7 U	2.7 U	5.2 U	5.3 U
CHLOROFORM	**38**	4.7 U	14 U	**21**	4.9 U	**30**	**31**
CHLOROMETHANE	32 U	8 U	23 U	8.5 U	8.3 U	16 U	17 U
CIS-1,2-DICHLOROETHENE	**20**	3.8 U	11 U	4.1 U	**5.5**	**19**	**23**
CIS-1,3-DICHLOROPROPENE	18 U	4.4 U	13 U	4.6 U	4.6 U	9 U	9.2 U

TABLE A-3: SEPTEMBER 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 162 Alameda Point, Alameda, California

Sample Location ID	162SG-01	162SG-02	162SG-03	162SG-04	162SG-05	162SG-06	162SG-06
Sample ID	162SG01-003	162SG02-003	162SG03-003	162SG04-003	162SG05-003	162SG06-003	162SG06-004
Sample Date	09/27/2006	09/28/2006	09/28/2006	09/28/2006	09/27/2006	09/27/2006	09/27/2006
Matrix	AIR	AIR	AIR	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)							
CYCLOHEXANE	14 U	3.3 U	9.7 U	3.5 U	3.5 U	6.8 U	7 U
DIBROMOCHLOROMETHANE	34 U	8.3 U	24 U	8.7 U	8.6 U	17 U	17 U
DICHLORODIFLUOROMETHANE	19 U	4.8 U	14 U	5.1 U	5 U	9.8 U	10 U
ETHANOL	30 U	7.3 U	21 U	7.7 U	**11**	15 U	15 U
ETHYLBENZENE	17 U	4.2 U	12 U	4.4 U	4.4 U	8.6 U	8.8 U
ETHYLENE DIBROMIDE	30 U	7.4 U	22 U	7.9 U	7.8 U	15 U	16 U
HEPTANE	16 U	4 U	12 U	4.2 U	4.1 U	8.2 U	8.3 U
HEXACHLOROBUTADIENE	170 U	41 U	120 U	44 U	43 U	85 U	86 U
HEXANE	14 U	3.4 U	9.9 U	3.6 U	3.6 U	7 U	7.1 U
ISOPROPYL ALCOHOL	39 U	**370**	**1,200**	**1,100**	**1,900**	**280**	**28**
ISOPROPYLBENZENE	19 U	4.8 U	14 U	5 U	5 U	9.8 U	9.9 U
M,P-XYLENE	17 U	4.2 U	12 U	4.4 U	4.4 U	8.6 U	8.8 U
METHYL-T-BUTYL ETHER	14 U	3.5 U	10 U	3.7 U	3.6 U	7.2 U	7.3 U
METHYLENE CHLORIDE	14 U	3.4 U	9.8 U	3.6 U	3.5 U	6.9 U	7 U
N-PROPYLBENZENE	19 U	4.8 U	14 U	5 U	5 U	9.8 U	9.9 U
NAPHTHALENE	83 U	20 U	59 U	21 U	21 U	42 U	42 U
O-XYLENE	17 U	4.2 U	12 U	4.4 U	4.4 U	8.6 U	8.8 U
STYRENE	17 U	4.1 U	12 U	4.4 U	4.3 U	8.5 U	8.6 U
TETRACHLOROETHENE	27 U	6.6 U	**76**	**11**	6.8 U	**27**	**25**
TETRAHYDROFURAN	12 U	**7.3 J**	8.3 UJ	**20 J**	**3.2**	5.9 U	6 U
TOLUENE	15 U	**4.4**	11 U	3.9 U	**4**	7.5 U	**8**
TRANS-1,2-DICHLOROETHENE	16 U	3.8 U	11 U	4.1 U	4 U	**8.6**	8 U
TRANS-1,3-DICHLOROPROPENE	18 U	4.4 U	13 U	4.6 U	4.6 U	9 U	9.2 U
TRICHLOROETHENE	**3,700**	**290**	**3,400**	**960**	**560**	**2,700**	**2,800**
TRICHLOROFLUOROMETHANE	22 U	5.4 U	16 U	5.8 U	**5.8**	**19**	**20**
TRICHLOROTRIFLUOROETHANE	30 U	7.4 U	22 U	7.8 U	7.7 U	**20**	**22**
VINYL CHLORIDE	10 U	2.5 U	7.2 U	2.6 U	2.6 U	5.1 U	5.2 U

TABLE A-3: SEPTEMBER 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 162 Alameda Point, Alameda, California

Sample Location ID	162SG-07	162SG-08	162SG-09	162SG-09	162SG-10	162SG-11	162SG-12
Sample ID	162SG07-003	162SG08-003	162SG09-003	162SG09-004	162SG10-003	162SG11-003	162SG12-003
Sample Date	09/27/2006	09/27/2006	09/27/2006	09/28/2006	09/27/2006	09/27/2006	09/27/2006
Matrix	AIR	AIR	AIR	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)							
1,1,1-TRICHLOROETHANE	**27**	**47**	5.4 U	**46**	**140**	**14**	**11**
1,1,2,2-TETRACHLOROETHANE	14 U	27 U	6.8 U	6.8 U	6.9 U	6.8 U	14 U
1,1,2-TRICHLOROETHANE	11 U	21 U	5.4 U	5.4 U	5.5 U	5.4 U	11 U
1,1-DICHLOROETHANE	8.2 U	16 U	4 U	4 U	4.1 U	4 U	8 U
1,1-DICHLOROETHENE	8 U	16 U	3.9 U	3.9 U	4 U	3.9 U	7.8 U
1,2,4-TRICHLOROBENZENE	60 U	120 U	29 U	30 U	30 U	29 U	58 U
1,2,4-TRIMETHYLBENZENE	9.9 UJ	19 UJ	**6.2 J**	4.9 U	**7.7 J**	**4.9 J**	9.7 UJ
1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE	14 U	28 U	6.9 U	7 U	7.1 U	6.9 U	14 U
1,2-DICHLOROBENZENE	12 U	24 U	5.9 U	6 U	6.1 U	5.9 U	12 U
1,2-DICHLOROETHANE	8.2 U	16 U	4 U	4 UJ	4.1 U	4 U	8 U
1,2-DICHLOROPROPANE	9.3 U	18 U	4.6 U	4.6 U	4.7 U	4.6 U	9.1 U
1,3,5-TRIMETHYLBENZENE	9.9 U	19 U	4.8 U	4.9 U	5 U	4.8 U	9.7 U
1,3-BUTADIENE	4.5 U	8.7 U	2.2 U	2.2 U	2.2 U	2.2 U	4.4 U
1,3-DICHLOROBENZENE	12 U	24 U	5.9 U	6 U	6.1 U	5.9 U	12 U
1,4-DICHLOROBENZENE	12 U	24 U	5.9 U	6 U	6.1 U	5.9 U	12 U
1,4-DIOXANE	29 U	57 U	14 U	14 U	14 U	14 U	28 U
2,2,4-TRIMETHYLPENTANE	9.4 U	18 U	4.6 U	4.6 U	4.7 U	4.6 U	9.2 U
2-BUTANONE	**22**	12 U	**4.3**	**9.8**	3 U	**28**	**38**
2-HEXANONE	33 U	64 U	16 U	16 U	16 U	16 U	32 U
3-CHLOROPROPENE	25 U	49 U	12 U	12 U	13 U	12 U	25 U
4-ETHYL TOLUENE	9.9 U	19 U	4.8 U	4.9 U	**4.9 J**	4.8 U	9.7 U
4-METHYL-2-PENTANONE	8.3 U	16 U	**5.9**	**14**	4.1 U	4 U	**8.4**
ACETONE	**52**	37 U	**30**	**17**	**10**	**83**	**83**
BENZENE	6.4 U	12 U	3.1 U	3.2 U	3.2 U	3.1 U	6.3 U
BENZYL CHLORIDE	10 U	20 U	5.1 U	5.2 U	5.2 U	5.1 U	10 U
BROMODICHLOROMETHANE	14 U	26 U	6.6 U	6.7 U	6.8 U	6.6 U	13 U
BROMOFORM	21 U	41 U	10 U	10 U	10 U	10 U	20 U
BROMOMETHANE	7.8 U	15 U	3.8 U	3.9 U	3.9 U	3.8 U	7.6 U
CARBON DISULFIDE	6.3 U	12 U	3.1 U	3.1 U	**4.5**	**3.1**	6.1 U
CARBON TETRACHLORIDE	13 U	25 U	6.2 U	6.3 U	6.4 U	6.2 U	12 U
CHLOROBENZENE	9.3 U	18 U	4.5 U	4.6 U	4.6 U	4.5 U	9.1 U
CHLOROETHANE	5.3 U	10 U	2.6 U	2.6 U	2.7 U	2.6 U	5.2 U
CHLOROFORM	**32**	**160**	4.8 U	**31**	**12**	**9.4**	9.6 U
CHLOROMETHANE	17 U	32 U	8.1 U	8.2 U	8.3 U	8.1 U	16 U
CIS-1,2-DICHLOROETHENE	8 U	**20**	3.9 U	3.9 U	4 U	3.9 U	**14**
CIS-1,3-DICHLOROPROPENE	9.2 U	18 U	4.5 U	4.5 U	4.6 U	4.5 U	8.9 U

TABLE A-3: SEPTEMBER 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 162 Alameda Point, Alameda, California

Sample Location ID	162SG-07	162SG-08	162SG-09	162SG-09	162SG-10	162SG-11	162SG-12
Sample ID	162SG07-003	162SG08-003	162SG09-003	162SG09-004	162SG10-003	162SG11-003	162SG12-003
Sample Date	09/27/2006	09/27/2006	09/27/2006	09/28/2006	09/27/2006	09/27/2006	09/27/2006
Matrix	AIR	AIR	AIR	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)							
CYCLOHEXANE	7 U	14 U	3.4 U	3.4 U	3.5 U	3.4 U	6.8 U
DIBROMOCHLOROMETHANE	17 U	34 U	8.4 U	8.5 U	8.6 U	8.4 U	17 U
DICHLORODIFLUOROMETHANE	10 U	19 U	4.9 U	**5.1**	5 U	4.9 U	9.7 U
ETHANOL	15 U	30 U	**8**	7.5 U	7.6 U	7.4 U	15 U
ETHYLBENZENE	8.8 U	17 U	4.3 U	4.3 U	4.4 U	4.3 U	8.6 U
ETHYLENE DIBROMIDE	16 U	30 U	7.6 U	7.6 U	7.8 U	7.6 U	15 U
HEPTANE	8.3 U	16 U	4 U	4.1 U	4.1 U	4 U	8.1 U
HEXACHLOROBUTADIENE	86 U	170 U	42 U	42 U	43 U	42 U	84 U
HEXANE	7.1 U	14 U	3.5 U	3.5 U	3.6 U	3.5 U	6.9 U
ISOPROPYL ALCOHOL	**560**	39 U	**250**	**1,400**	**10**	**610**	**2,400**
ISOPROPYLBENZENE	9.9 U	19 U	4.8 U	4.9 U	5 U	4.8 U	9.7 U
M,P-XYLENE	8.8 U	17 U	**8.4**	4.3 U	4.4 U	4.3 U	8.6 U
METHYL-T-BUTYL ETHER	7.3 U	14 U	3.6 U	3.6 U	3.6 U	3.6 U	7.1 U
METHYLENE CHLORIDE	7 U	14 U	3.4 U	**3.6**	3.5 U	3.4 U	6.8 U
N-PROPYLBENZENE	9.9 U	19 U	4.8 U	4.9 U	5 U	4.8 U	9.7 U
NAPHTHALENE	42 U	83 U	21 U	21 U	21 U	21 U	41 U
O-XYLENE	8.8 U	17 U	4.3 U	4.3 U	4.4 U	4.3 U	8.6 U
STYRENE	8.6 U	17 U	4.2 U	4.2 U	4.3 U	4.2 U	8.4 U
TETRACHLOROETHENE	**17**	**60**	**7.7**	**130**	**18**	6.7 U	13 U
TETRAHYDROFURAN	6 U	12 U	2.9 U	**24 J**	3 U	2.9 U	5.8 U
TOLUENE	7.6 U	**23**	**34**	3.7 U	**20**	**16**	7.4 U
TRANS-1,2-DICHLOROETHENE	8 U	**22**	3.9 U	3.9 U	4 U	3.9 U	**8.1**
TRANS-1,3-DICHLOROPROPENE	9.2 U	18 U	4.5 U	4.5 U	4.6 U	4.5 U	8.9 U
TRICHLOROETHENE	**3,400**	**5,500**	**160**	**1,900**	**25**	5.3 U	**2,500**
TRICHLOROFLUOROMETHANE	11 U	22 U	5.5 U	**6.5**	5.7 U	5.5 U	**12**
TRICHLOROTRIFLUOROETHANE	**93**	**620**	**12**	**68**	**9.5**	7.5 U	15 U
VINYL CHLORIDE	5.2 U	10 U	2.5 U	2.5 U	2.6 U	2.5 U	5 U

TABLE A-3: SEPTEMBER 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 162 Alameda Point, Alameda, California

Sample Location ID	162SG-13	162SG-14	162SG-15	162SG-16	162SG-17	162SG-18	162SG-19
Sample ID	162SG13-003	162SG14-003	162SG15-003	162SG016-003	162SG17-003	162SG18-003	162SG19-003
Sample Date	09/28/2006	09/28/2006	09/27/2006	09/27/2006	09/27/2006	09/28/2006	09/28/2006
Matrix	AIR	AIR	AIR	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)							
1,1,1-TRICHLOROETHANE	5.4 U	55 U	95 U	21 U	**20**	**30**	**7.2**
1,1,2,2-TETRACHLOROETHANE	6.8 U	69 U	120 U	27 U	10 U	6.8 U	6.8 U
1,1,2-TRICHLOROETHANE	5.4 U	55 U	95 U	21 U	8.3 U	5.4 U	5.4 U
1,1-DICHLOROETHANE	4 U	41 U	70 U	16 U	6.2 U	4 U	4 U
1,1-DICHLOROETHENE	3.9 U	40 U	69 U	16 U	6 U	3.9 U	3.9 U
1,2,4-TRICHLOROBENZENE	30 U	300 U	520 U	120 U	45 U	30 U	29 U
1,2,4-TRIMETHYLBENZENE	4.9 U	50 U	86 UJ	19 UJ	**7.7 J**	4.9 U	4.8 U
1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE	7 U	71 U	120 U	28 U	11 U	7 U	6.9 U
1,2-DICHLOROBENZENE	6 U	61 U	100 U	24 U	9.2 U	6 U	5.9 U
1,2-DICHLOROETHANE	4 UJ	41 UJ	70 U	16 U	6.2 U	4 UJ	4 UJ
1,2-DICHLOROPROPANE	4.6 U	47 U	80 U	18 U	7 U	4.6 U	4.6 U
1,3,5-TRIMETHYLBENZENE	4.9 U	50 U	86 U	19 U	7.5 U	4.9 U	4.8 U
1,3-BUTADIENE	2.2 U	22 U	38 U	8.7 U	3.4 U	2.2 U	2.2 U
1,3-DICHLOROBENZENE	6 U	61 U	100 U	24 U	9.2 U	6 U	5.9 U
1,4-DICHLOROBENZENE	6 U	61 U	100 U	24 U	9.2 U	6 U	5.9 U
1,4-DIOXANE	14 U	140 U	250 U	57 U	22 U	14 U	14 U
2,2,4-TRIMETHYLPENTANE	4.6 U	47 U	81 U	18 U	7.1 U	4.6 U	4.6 U
2-BUTANONE	**3.4**	30 U	51 U	12 U	4.5 U	**11**	**6**
2-HEXANONE	16 U	160 U	280 U	64 U	25 U	16 U	16 U
3-CHLOROPROPENE	12 U	130 U	220 U	49 U	19 U	12 U	12 U
4-ETHYL TOLUENE	4.9 U	50 U	86 U	19 U	7.5 U	4.9 U	4.8 U
4-METHYL-2-PENTANONE	4.1 U	41 U	71 U	16 U	6.2 U	4.1 U	4 U
ACETONE	**40**	96 U	160 U	37 U	14 U	**48**	**19**
BENZENE	3.2 U	32 U	56 U	12 U	4.9 U	3.2 U	3.1 U
BENZYL CHLORIDE	5.2 U	52 U	90 U	20 U	7.9 U	5.2 U	5.1 U
BROMODICHLOROMETHANE	6.7 U	68 U	120 U	26 U	10 U	6.7 U	6.6 U
BROMOFORM	10 U	100 U	180 U	41 U	16 U	10 U	10 U
BROMOMETHANE	3.9 U	39 U	68 U	15 U	5.9 U	3.9 U	3.8 U
CARBON DISULFIDE	3.1 U	**170**	54 U	12 U	4.7 U	3.1 U	3.1 U
CARBON TETRACHLORIDE	6.3 U	64 U	110 U	25 U	9.6 U	6.3 U	6.2 U
CHLOROBENZENE	4.6 U	46 U	80 U	18 U	7 U	4.6 U	4.5 U
CHLOROETHANE	2.6 U	27 U	46 U	10 U	4 U	2.6 U	2.6 U
CHLOROFORM	4.8 U	49 U	85 U	19 U	7.4 U	**33**	4.8 U
CHLOROMETHANE	8.2 U	83 U	140 U	32 U	12 U	8.2 U	8.1 U
CIS-1,2-DICHLOROETHENE	3.9 U	40 U	69 U	16 U	6 U	3.9 U	3.9 U
CIS-1,3-DICHLOROPROPENE	4.5 U	46 U	79 U	18 U	6.9 U	4.5 U	4.5 U

TABLE A-3: SEPTEMBER 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 162 Alameda Point, Alameda, California

Sample Location ID	162SG-13	162SG-14	162SG-15	162SG-16	162SG-17	162SG-18	162SG-19
Sample ID	162SG13-003	162SG14-003	162SG15-003	162SG016-003	162SG17-003	162SG18-003	162SG19-003
Sample Date	09/28/2006	09/28/2006	09/27/2006	09/27/2006	09/27/2006	09/28/2006	09/28/2006
Matrix	AIR	AIR	AIR	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)							
CYCLOHEXANE	3.4 U	35 U	60 U	14 U	5.2 U	3.4 U	3.4 U
DIBROMOCHLOROMETHANE	8.5 U	86 U	150 U	34 U	13 U	8.5 U	8.4 U
DICHLORODIFLUOROMETHANE	4.9 U	50 U	86 U	19 U	7.5 U	4.9 U	4.9 U
ETHANOL	7.5 U	76 U	130 U	30 U	11 U	7.5 U	7.4 U
ETHYLBENZENE	4.3 U	44 U	76 U	17 U	6.6 U	4.3 U	4.3 U
ETHYLENE DIBROMIDE	7.6 U	78 U	130 U	30 U	12 U	7.6 U	7.6 U
HEPTANE	4.1 U	41 U	71 U	16 U	6.2 U	4.1 U	4 U
HEXACHLOROBUTADIENE	42 U	430 U	740 U	170 U	65 U	42 U	42 U
HEXANE	3.5 U	36 U	61 U	14 U	5.4 U	3.5 U	3.5 U
ISOPROPYL ALCOHOL	**5,600**	**890**	170 U	39 U	**29**	**2,600**	**480**
ISOPROPYLBENZENE	4.9 U	50 U	86 U	19 U	7.5 U	4.9 U	4.8 U
M,P-XYLENE	4.3 U	44 U	76 U	17 U	6.6 U	4.3 U	4.3 U
METHYL-T-BUTYL ETHER	3.6 U	36 U	63 U	14 U	5.5 U	3.6 U	3.6 U
METHYLENE CHLORIDE	3.4 U	35 U	60 U	14 U	5.3 U	3.4 U	3.4 U
N-PROPYLBENZENE	4.9 U	50 U	86 U	19 U	7.5 U	4.9 U	4.8 U
NAPHTHALENE	21 U	210 U	360 U	83 U	32 U	21 U	21 U
O-XYLENE	4.3 U	44 U	76 U	17 U	6.6 U	4.3 U	4.3 U
STYRENE	4.2 U	43 U	74 U	17 U	6.5 U	4.2 U	4.2 U
TETRACHLOROETHENE	**9.7**	**96**	120 U	**36**	**78**	**160**	6.7 U
TETRAHYDROFURAN	2.9 UJ	**42 J**	51 U	12 U	4.5 U	**35 J**	**9.2 J**
TOLUENE	**5**	38 U	66 U	15 U	**9.8**	**4.5**	3.7 U
TRANS-1,2-DICHLOROETHENE	3.9 U	40 U	69 U	**19**	6 U	3.9 U	3.9 U
TRANS-1,3-DICHLOROPROPENE	4.5 U	46 U	79 U	18 U	6.9 U	4.5 U	4.5 U
TRICHLOROETHENE	**780**	**12,000**	**15,000**	**6,300**	**2,500**	**510**	**14**
TRICHLOROFLUOROMETHANE	**7.3**	**99**	98 U	22 U	8.6 U	5.6 U	5.5 U
TRICHLOROTRIFLUOROETHANE	7.6 U	77 U	**250**	**360**	**120**	**43**	7.5 U
VINYL CHLORIDE	2.5 U	26 U	44 U	10 U	3.9 U	2.5 U	2.5 U

TABLE A-3: SEPTEMBER 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 162 Alameda Point, Alameda, California

Sample Location ID	162SG-20	162SG-21
Sample ID	162SG20-003	162SG21-003
Sample Date	09/28/2006	09/27/2006
Matrix	AIR	AIR
EPA TO-15 (UG/M3)		
1,1,1-TRICHLOROETHANE	5.4 U	5.5 U
1,1,2,2-TETRACHLOROETHANE	6.8 U	6.9 U
1,1,2-TRICHLOROETHANE	5.4 U	5.5 U
1,1-DICHLOROETHANE	4 U	4.1 U
1,1-DICHLOROETHENE	3.9 U	4 U
1,2,4-TRICHLOROBENZENE	29 U	30 U
1,2,4-TRIMETHYLBENZENE	4.8 U	**6.5 J**
1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE	6.9 U	7.1 U
1,2-DICHLOROBENZENE	5.9 U	6.1 U
1,2-DICHLOROETHANE	4 UJ	4.1 U
1,2-DICHLOROPROPANE	4.6 U	4.7 U
1,3,5-TRIMETHYLBENZENE	4.8 U	5 U
1,3-BUTADIENE	2.2 U	2.2 U
1,3-DICHLOROBENZENE	5.9 U	6.1 U
1,4-DICHLOROBENZENE	5.9 U	6.1 U
1,4-DIOXANE	14 U	14 U
2,2,4-TRIMETHYLPENTANE	4.6 U	4.7 U
2-BUTANONE	2.9 U	**3.6**
2-HEXANONE	16 U	16 U
3-CHLOROPROPENE	12 U	13 U
4-ETHYL TOLUENE	4.8 U	5 U
4-METHYL-2-PENTANONE	4 U	4.1 U
ACETONE	**23**	**14**
BENZENE	3.1 U	3.2 U
BENZYL CHLORIDE	5.1 U	5.2 U
BROMODICHLOROMETHANE	6.6 U	6.8 U
BROMOFORM	10 U	10 U
BROMOMETHANE	3.8 U	3.9 U
CARBON DISULFIDE	**5.3**	3.1 U
CARBON TETRACHLORIDE	6.2 U	6.4 U
CHLOROBENZENE	4.5 U	4.6 U
CHLOROETHANE	2.6 U	2.7 U
CHLOROFORM	4.8 U	4.9 U
CHLOROMETHANE	8.1 U	8.3 U
CIS-1,2-DICHLOROETHENE	3.9 U	4 U
CIS-1,3-DICHLOROPROPENE	4.5 U	4.6 U

TABLE A-3: SEPTEMBER 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 162 Alameda Point, Alameda, California

Sample Location ID	162SG-20	162SG-21
Sample ID	162SG20-003	162SG21-003
Sample Date	09/28/2006	09/27/2006
Matrix	AIR	AIR
EPA TO-15 (UG/M3)		
CYCLOHEXANE	3.4 U	3.5 U
DIBROMOCHLOROMETHANE	8.4 U	8.6 U
DICHLORODIFLUOROMETHANE	4.9 U	5 U
ETHANOL	**64**	7.6 U
ETHYLBENZENE	4.3 U	4.4 U
ETHYLENE DIBROMIDE	7.6 U	7.8 U
HEPTANE	4 U	4.1 U
HEXACHLOROBUTADIENE	42 U	43 U
HEXANE	**8**	3.6 U
ISOPROPYL ALCOHOL	**30**	9.9 U
ISOPROPYLBENZENE	4.8 U	5 U
M,P-XYLENE	4.3 U	4.4 U
METHYL-T-BUTYL ETHER	3.6 U	3.6 U
METHYLENE CHLORIDE	**120**	3.5 U
N-PROPYLBENZENE	4.8 U	5 U
NAPHTHALENE	21 U	21 U
O-XYLENE	4.3 U	4.4 U
STYRENE	4.2 U	4.3 U
TETRACHLOROETHENE	6.7 U	**13**
TETRAHYDROFURAN	2.9 UJ	3 U
TOLUENE	3.7 U	**32**
TRANS-1,2-DICHLOROETHENE	3.9 U	4 U
TRANS-1,3-DICHLOROPROPENE	4.5 U	4.6 U
TRICHLOROETHENE	**23**	**31**
TRICHLOROFLUOROMETHANE	5.5 U	5.7 U
TRICHLOROTRIFLUOROETHANE	7.5 U	7.7 U
VINYL CHLORIDE	2.5 U	2.6 U

Notes: Detected analytes are printed in bold.

ID Identification
J Estimated value
U Nondetected
UG/M3 Micrograms per cubic meter

TABLE A-4: SEPTEMBER 2006 SOIL GAS ANALYTICAL RESULTS

Building 163A Alameda Point, Alameda, California

Sample Location ID	163SG-01	163SG-02
Sample ID	163SG01-003	163SG02-003
Sample Date	09/27/2006	09/27/2006
Matrix	AIR	AIR
EPA TO-15 (UG/M3)		
1,1,1-TRICHLOROETHANE	**47**	540 U
1,1,2,2-TETRACHLOROETHANE	28 U	680 U
1,1,2-TRICHLOROETHANE	22 U	540 U
1,1-DICHLOROETHANE	**20**	400 U
1,1-DICHLOROETHENE	16 U	390 U
1,2,4-TRICHLOROBENZENE	120 U	3,000 U
1,2,4-TRIMETHYLBENZENE	20 UJ	490 UJ
1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE	28 U	700 U
1,2-DICHLOROBENZENE	24 U	600 U
1,2-DICHLOROETHANE	16 U	400 U
1,2-DICHLOROPROPANE	19 U	460 U
1,3,5-TRIMETHYLBENZENE	20 U	490 U
1,3-BUTADIENE	8.9 U	220 U
1,3-DICHLOROBENZENE	24 U	600 U
1,4-DICHLOROBENZENE	24 U	600 U
1,4-DIOXANE	58 U	1,400 U
2,2,4-TRIMETHYLPENTANE	19 U	460 U
2-BUTANONE	12 U	290 U
2-HEXANONE	66 U	1,600 U
3-CHLOROPROPENE	50 U	1,200 U
4-ETHYL TOLUENE	20 U	490 U
4-METHYL-2-PENTANONE	16 U	410 U
ACETONE	38 U	940 U
BENZENE	13 U	320 U
BENZYL CHLORIDE	21 U	520 U
BROMODICHLOROMETHANE	27 U	670 U
BROMOFORM	42 U	1,000 U
BROMOMETHANE	16 U	390 U
CARBON DISULFIDE	12 U	310 U
CARBON TETRACHLORIDE	25 U	630 U
CHLOROBENZENE	18 U	460 U
CHLOROETHANE	11 U	260 U
CHLOROFORM	20 U	480 U
CHLOROMETHANE	33 U	820 U
CIS-1,2-DICHLOROETHENE	**290**	**40,000**
CIS-1,3-DICHLOROPROPENE	18 U	450 U

TABLE A-4: SEPTEMBER 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 163A Alameda Point, Alameda, California

Sample Location ID	163SG-01	163SG-02
Sample ID	163SG01-003	163SG02-003
Sample Date	09/27/2006	09/27/2006
Matrix	AIR	AIR
EPA TO-15 (UG/M3)		
CYCLOHEXANE	14 U	340 U
DIBROMOCHLOROMETHANE	34 U	850 U
DICHLORODIFLUOROMETHANE	20 U	490 U
ETHANOL	30 U	750 U
ETHYLBENZENE	18 U	430 U
ETHYLENE DIBROMIDE	31 U	760 U
HEPTANE	16 U	410 U
HEXACHLOROBUTADIENE	170 U	4,200 U
HEXANE	14 U	350 U
ISOPROPYL ALCOHOL	**300**	980 U
ISOPROPYLBENZENE	20 U	490 U
M,P-XYLENE	18 U	430 U
METHYL-T-BUTYL ETHER	14 U	360 U
METHYLENE CHLORIDE	14 U	340 U
N-PROPYLBENZENE	20 U	490 U
NAPHTHALENE	85 U	2,100 U
O-XYLENE	18 U	430 U
STYRENE	17 U	420 U
TETRACHLOROETHENE	27 U	670 U
TETRAHYDROFURAN	12 U	290 U
TOLUENE	**16**	370 U
TRANS-1,2-DICHLOROETHENE	**61**	**1,900**
TRANS-1,3-DICHLOROPROPENE	18 U	450 U
TRICHLOROETHENE	**3,800**	**120,000**
TRICHLOROFLUOROMETHANE	23 U	560 U
TRICHLOROTRIFLUOROETHANE	**35**	760 U
VINYL CHLORIDE	10 U	250 U

Notes: Detected analytes are printed in bold.

ID Identification
J Estimated value
U Nondetected
UG/M3 Micrograms per cubic meter

TABLE A-5: SEPTEMBER 2006 SOIL GAS ANALYTICAL RESULTS

Building 398 Alameda Point, Alameda, California

Sample Location ID	398SG-01	398SG-01	398SG-02	398SG-03	398SG-04	398SG-05	398SG-06
Sample ID	398SG01-003	398SG01-004	398SG02-003	398SG03-003	398SG04-003	398SG05-003	398SG06-003
Sample Date	09/29/2006	09/29/2006	09/29/2006	09/28/2006	09/28/2006	09/28/2006	09/28/2006
Matrix	AIR	AIR	AIR	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)							
1,1,1-TRICHLOROETHANE	**20**	**18**	**19**	**31**	**42**	**32**	**47**
1,1,2,2-TETRACHLOROETHANE	6.9 U	6.8 U	6.6 U	8.2 U	6.9 U	6.8 U	7.2 U
1,1,2-TRICHLOROETHANE	5.5 U	5.4 U	5.3 U	6.5 U	5.5 U	5.4 U	5.7 U
1,1-DICHLOROETHANE	4.1 U	4 U	3.9 U	4.8 U	4.1 U	4 U	4.2 U
1,1-DICHLOROETHENE	4 U	3.9 U	3.8 U	4.7 U	4 U	3.9 U	4.1 U
1,2,4-TRICHLOROBENZENE	30 U	30 U	29 U	35 U	30 U	30 U	31 U
1,2,4-TRIMETHYLBENZENE	5 U	4.9 U	4.8 U	5.8 U	5 U	4.9 U	5.1 U
1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE	7.1 U	7 U	6.8 U	8.3 U	7.1 U	7 U	7.3 U
1,2-DICHLOROBENZENE	6.1 U	6 U	5.8 U	7.2 U	6.1 U	6 U	6.3 U
1,2-DICHLOROETHANE	4.1 UJ	4 UJ	3.9 UJ	4.8 UJ	4.1 UJ	4 UJ	4.2 UJ
1,2-DICHLOROPROPANE	4.7 U	4.6 U	4.5 U	5.5 U	4.7 U	4.6 U	4.8 U
1,3,5-TRIMETHYLBENZENE	5 U	4.9 U	4.8 U	5.8 U	5 U	4.9 U	5.1 U
1,3-BUTADIENE	2.2 U	2.2 U	2.1 U	2.6 U	2.2 U	2.2 U	2.3 U
1,3-DICHLOROBENZENE	6.1 U	6 U	5.8 U	7.2 U	6.1 U	6 U	6.3 U
1,4-DICHLOROBENZENE	6.1 U	6 U	5.8 U	7.2 U	6.1 U	6 U	6.3 U
1,4-DIOXANE	14 U	14 U	14 U	17 U	14 U	14 U	15 U
2,2,4-TRIMETHYLPENTANE	4.7 U	4.6 U	4.5 U	5.6 U	4.7 U	4.6 U	4.9 U
2-BUTANONE	**5.5**	**9.1**	**23**	**35**	**3.7**	**17**	**13**
2-HEXANONE	16 U	16 U	16 U	19 U	16 U	16 U	17 U
3-CHLOROPROPENE	13 U	12 U	12 U	15 U	13 U	12 U	13 U
4-ETHYL TOLUENE	5 U	4.9 U	4.8 U	5.8 U	5 U	4.9 U	5.1 U
4-METHYL-2-PENTANONE	4.1 U	4.1 U	**4.6**	**7.6**	4.1 U	**140**	4.3 U
ACETONE	**22**	**35**	**66**	**130**	**23**	**38**	**26**
BENZENE	3.2 U	3.2 U	3.1 U	3.8 U	3.2 U	3.2 U	3.3 U
BENZYL CHLORIDE	5.2 U	5.2 U	5 U	6.2 U	5.2 U	5.2 U	5.4 U
BROMODICHLOROMETHANE	6.8 U	6.7 U	6.5 U	8 U	6.8 U	6.7 U	7 U
BROMOFORM	10 U	10 U	10 U	12 U	10 U	10 U	11 U
BROMOMETHANE	3.9 U	3.9 U	3.8 U	4.6 U	3.9 U	3.9 U	4 U
CARBON DISULFIDE	**3.8**	3.1 U	3 U	3.7 U	3.1 U	3.1 U	3.2 U
CARBON TETRACHLORIDE	6.4 U	6.3 U	6.1 U	7.5 U	6.4 U	6.3 U	6.6 U
CHLOROBENZENE	4.6 U	4.6 U	4.5 U	5.5 U	4.6 U	4.6 U	4.8 U
CHLOROETHANE	2.7 U	2.6 U	2.6 U	3.1 U	2.7 U	2.6 U	2.8 U
CHLOROFORM	**11**	**9.3**	4.7 U	**7**	**13**	4.8 U	5.1 U
CHLOROMETHANE	8.3 U	8.2 U	8 U	9.8 U	8.3 U	8.2 U	8.6 U
CIS-1,2-DICHLOROETHENE	4 U	3.9 U	3.8 U	4.7 U	4 U	3.9 U	4.1 U
CIS-1,3-DICHLOROPROPENE	4.6 U	4.5 U	4.4 U	5.4 U	4.6 U	4.5 U	4.7 U

TABLE A-5: SEPTEMBER 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 398 Alameda Point, Alameda, California

Sample Location ID	398SG-01	398SG-01	398SG-02	398SG-03	398SG-04	398SG-05	398SG-06
Sample ID	398SG01-003	398SG01-004	398SG02-003	398SG03-003	398SG04-003	398SG05-003	398SG06-003
Sample Date	09/29/2006	09/29/2006	09/29/2006	09/28/2006	09/28/2006	09/28/2006	09/28/2006
Matrix	AIR	AIR	AIR	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)							
CYCLOHEXANE	3.5 U	3.4 U	3.3 U	4.1 U	3.5 U	**4.9**	3.6 U
DIBROMOCHLOROMETHANE	8.6 U	8.5 U	8.3 U	10 U	8.6 U	8.5 U	8.9 U
DICHLORODIFLUOROMETHANE	**7.7**	4.9 U	4.8 U	5.9 U	5 U	4.9 U	5.2 U
ETHANOL	7.6 U	7.5 U	7.3 U	**9.8**	7.6 U	7.5 U	7.9 U
ETHYLBENZENE	4.4 U	4.3 U	4.2 U	5.2 U	4.4 U	**5**	4.5 U
ETHYLENE DIBROMIDE	7.8 U	7.6 U	7.4 U	9.1 U	7.8 U	7.6 U	8 U
HEPTANE	4.1 U	4.1 U	4 U	4.9 U	4.1 U	4.1 U	4.3 U
HEXACHLOROBUTADIENE	43 U	42 U	41 U	51 U	43 U	42 U	44 U
HEXANE	**11**	3.5 U	3.4 U	4.2 U	3.6 U	**5.4**	3.7 U
ISOPROPYL ALCOHOL	**580**	**220**	**620**	**1,900**	**240**	**480**	**1,700**
ISOPROPYLBENZENE	5 U	4.9 U	4.8 U	5.8 U	5 U	4.9 U	5.1 U
M,P-XYLENE	4.4 U	4.3 U	4.2 U	5.2 U	4.4 U	**11**	**8.4**
METHYL-T-BUTYL ETHER	3.6 U	3.6 U	3.5 U	4.3 U	3.6 U	3.6 U	3.8 U
METHYLENE CHLORIDE	**4.8**	**6**	3.4 U	4.1 U	3.5 U	**6.1**	3.6 U
N-PROPYLBENZENE	5 U	4.9 U	4.8 U	5.8 U	5 U	4.9 U	5.1 U
NAPHTHALENE	21 U	21 U	20 U	25 U	21 U	21 U	22 U
O-XYLENE	4.4 U	4.3 U	4.2 U	5.2 U	4.4 U	4.3 U	**4.7**
STYRENE	4.3 U	4.2 U	4.1 U	5.1 U	4.3 U	4.2 U	4.4 U
TETRACHLOROETHENE	**18**	**11**	6.6 U	**140**	**80**	**21**	**27**
TETRAHYDROFURAN	**7.4 J**	**4.3 J**	**8 J**	**21 J**	**6 J**	**6.9 J**	**15 J**
TOLUENE	**18**	**4.5**	3.6 U	4.5 U	3.8 U	**26**	3.9 U
TRANS-1,2-DICHLOROETHENE	4 U	3.9 U	3.8 U	4.7 U	4 U	3.9 U	4.1 U
TRANS-1,3-DICHLOROPROPENE	4.6 U	4.5 U	4.4 U	5.4 U	4.6 U	4.5 U	4.7 U
TRICHLOROETHENE	5.4 U	5.3 U	5.2 U	**1,400**	**340**	**12**	**18**
TRICHLOROFLUOROMETHANE	5.7 U	5.6 U	5.4 U	6.7 U	5.7 U	5.6 U	5.9 U
TRICHLOROTRIFLUOROETHANE	**18**	**16**	**9.4**	9.1 U	7.7 U	7.6 U	**9**
VINYL CHLORIDE	2.6 U	2.5 U	2.5 U	3 U	2.6 U	2.5 U	2.7 U

Notes: Detected analytes are printed in bold.

- ID Identification
- J Estimated value
- U Nondetected
- UG/M3 Micrograms per cubic meter

TABLE A-6: MARCH 2007 SOIL GAS ANALYTICAL RESULTS

Building 163A Alameda Point, Alameda, California

Sample Location ID	163SG-01	163SG-02	163SG-02
Sample ID	163SG01-005	163SG02-005	163SG02-006
Sample Date	03/08/2007	03/08/2007	03/08/2007
Matrix	AIR	AIR	AIR
EPA TO-15 (UG/M3)			
1,1,1-TRICHLOROETHANE	250 U	50 U	10 U
1,1,2,2-TETRACHLOROETHANE	250 U	50 U	10 U
1,1,2-TRICHLOROETHANE	250 U	50 U	10 U
1,1-DICHLOROETHANE	250 U	50 U	**13**
1,1-DICHLOROETHENE	250 U	50 U	10 U
1,2,4-TRICHLOROBENZENE	500 U	100 U	20 U
1,2,4-TRIMETHYLBENZENE	250 U	50 U	10 U
1,2-DICHLOROBENZENE	500 U	100 U	20 U
1,2-DICHLOROETHANE	250 U	50 U	10 U
1,2-DICHLOROPROPANE	250 U	50 U	10 U
1,3,5-TRIMETHYLBENZENE	250 U	50 U	10 U
1,3-BUTADIENE	250 U	50 U	10 U
1,3-DICHLOROBENZENE	500 U	100 U	20 U
1,4-DICHLOROBENZENE	500 U	100 U	20 U
1,4-DIOXANE	250 U	50 U	10 U
2,2,4-TRIMETHYLPENTANE	250 U	50 U	10 U
2-BUTANONE	250 U	50 U	10 U
2-HEXANONE	250 U	50 U	10 U
3-CHLOROPROPENE	250 U	50 U	10 U
4-ETHYL TOLUENE	250 U	50 U	10 U
4-METHYL-2-PENTANONE	250 U	50 U	10 U
ACETONE	1,000 U	200 U	**42**
BENZENE	250 U	50 U	10 U
BENZYL CHLORIDE	250 U	50 U	10 U
BROMODICHLOROMETHANE	280 U	55 U	11 U
BROMOFORM	1,000 U	200 U	40 U
BROMOMETHANE	250 U	50 U	10 U
CARBON DISULFIDE	250 U	50 U	10 U
CARBON TETRACHLORIDE	250 U	50 U	10 U
CHLOROBENZENE	250 U	50 U	10 U
CHLOROETHANE	250 U	50 U	10 U
CHLOROFORM	250 U	50 U	10 U
CHLOROMETHANE	250 U	50 U	10 U
CIS-1,2-DICHLOROETHENE	**12,000**	**1,800**	**980**
CIS-1,3-DICHLOROPROPENE	250 U	50 U	10 U
CYCLOHEXANE	250 U	50 U	10 U

TABLE A-6: MARCH 2007 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 163A Alameda Point, Alameda, California

Sample Location ID	163SG-01	163SG-02	163SG-02
Sample ID	163SG01-005	163SG02-005	163SG02-006
Sample Date	03/08/2007	03/08/2007	03/08/2007
Matrix	AIR	AIR	AIR
EPA TO-15 (UG/M3)			
DIBROMOCHLOROMETHANE	250 U	50 U	10 U
DICHLORODIFLUOROMETHANE	500 U	100 U	20 U
DICHLOROTETRAFLUOROETHANE	500 U	100 U	20 U
ETHYL ACETATE	250 U	50 U	10 U
ETHYLBENZENE	250 U	50 U	**12**
ETHYLENE DIBROMIDE	250 U	50 U	10 U
HEPTANE	250 U	50 U	10 U
HEXACHLOROBUTADIENE	500 UJ	100 UJ	20 UJ
HEXANE	250 U	50 U	10 U
ISOPROPYL ALCOHOL	10,000 U	10,000 U	10,000 U
M,P-XYLENE	250 U	50 U	**15**
METHYL-T-BUTYL ETHER	250 U	50 U	10 U
METHYLENE CHLORIDE	250 U	50 U	10 U
NAPHTHALENE	500 U	100 U	20 U
O-XYLENE	250 U	50 U	10 U
PROPYLENE	500 U	100 U	20 U
STYRENE	250 U	50 U	10 U
TETRACHLOROETHENE	250 U	**180**	**110**
TETRAHYDROFURAN	250 U	50 U	10 U
TOLUENE	250 U	**160**	**94**
TRANS-1,2-DICHLOROETHENE	**470**	**69**	**42**
TRANS-1,3-DICHLOROPROPENE	250 U	50 U	10 U
TRICHLOROETHENE	**26,000**	**8,000**	**5,500**
TRICHLOROFLUOROMETHANE	250 U	50 U	10 U
TRICHLOROTRIFLUOROETHANE	500 U	100 U	20 U
VINYL ACETATE	250 U	50 U	10 U
VINYL BROMIDE	250 U	50 U	10 U
VINYL CHLORIDE	250 U	50 U	10 U

Notes: Detected analytes are printed in bold.

ID Identification
J Estimated value
U Nondetected
UG/M3 Micrograms per cubic meter

APPENDIX B
JANUARY 2006 SAMPLING RESULTS

TABLE B-1: JANUARY 2006 SOIL GAS ANALYTICAL RESULTS

Building 14 Alameda Point, Alameda, California

Sample Location ID	014SG-01	014SG-02	014SG-03	014SG-04	014SG-05	014SG-06	014SG-08
Sample ID	014SG-01-001	014SG-02-001	014SG-03-001	014SG-04-001	014SG-05-001	014SG-06-001	014SG-08-001
Sample Date	01/25/2006	01/25/2006	01/25/2006	01/25/2006	01/25/2006	01/25/2006	01/25/2006
Matrix	AIR	AIR	AIR	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)							
1,1,1-TRICHLOROETHANE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
1,1,2,2-TETRACHLOROETHANE	6 U	60 UJ	6 UJ	6 UJ	6 UJ	30 UJ	60 UJ
1,1,2-TRICHLOROETHANE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
1,1-DICHLOROETHANE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
1,1-DICHLOROETHENE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
1,2,4-TRICHLOROBENZENE	20 U	200 UJ	20 UJ	20 UJ	20 UJ	100 UJ	200 UJ
1,2,4-TRIMETHYLBENZENE	**6.7**	50 UJ	**55 J**	5 UJ	5 UJ	25 UJ	**790 J**
1,2-DICHLOROBENZENE	10 U	100 UJ	10 UJ	10 UJ	10 UJ	50 UJ	100 UJ
1,2-DICHLOROETHANE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
1,2-DICHLOROPROPANE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
1,3,5-TRIMETHYLBENZENE	5 U	50 U	**18**	5 U	5 U	25 U	**120**
1,3-BUTADIENE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
1,3-DICHLOROBENZENE	10 U	100 UJ	10 UJ	10 UJ	10 UJ	50 UJ	100 UJ
1,4-DICHLOROBENZENE	10 U	100 UJ	10 UJ	10 UJ	10 UJ	50 UJ	100 UJ
1,4-DIOXANE	5.5 U	55 U	5.5 U	5.5 U	5.5 U	28 U	55 U
2,2,4-TRIMETHYLPENTANE	**12**	**270**	**160**	5 U	**11**	**61**	**95**
2-BUTANONE	**7.1**	**120**	**76**	**42**	**18**	**73**	**260**
2-HEXANONE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
3-CHLOROPROPENE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
4-ETHYL TOLUENE	5 U	50 UJ	**44**	5 U	5 U	25 UJ	**810 J**
4-METHYL-2-PENTANONE	5 U	**240**	**150**	**150**	**55**	**90**	**210**
ACETONE	**66**	**630**	**400**	**130**	**73**	**370**	**1,100**
BENZENE	5 U	50 U	**19**	5 U	5 U	25 U	50 U
BENZYL CHLORIDE	10 U	100 U	10 U	10 U	10 U	50 U	100 U
BROMODICHLOROMETHANE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
BROMOFORM	5 U	50 U	5 U	5 U	5 U	25 U	50 U
BROMOMETHANE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
CARBON DISULFIDE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
CARBON TETRACHLORIDE	5.5 U	55 U	5.5 U	5.5 U	5.5 U	28 U	55 U
CHLOROBENZENE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
CHLOROETHANE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
CHLOROFORM	5 U	50 U	**14**	**7.9**	5 U	25 U	50 U
CHLOROMETHANE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
CIS-1,2-DICHLOROETHENE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
CIS-1,3-DICHLOROPROPENE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
CYCLOHEXANE	5 U	**180**	**76**	5 U	5 U	25 U	50 U

TABLE B-1: JANUARY 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 14 Alameda Point, Alameda, California

Sample Location ID	014SG-01	014SG-02	014SG-03	014SG-04	014SG-05	014SG-06	014SG-08
Sample ID	014SG-01-001	014SG-02-001	014SG-03-001	014SG-04-001	014SG-05-001	014SG-06-001	014SG-08-001
Sample Date	01/25/2006	01/25/2006	01/25/2006	01/25/2006	01/25/2006	01/25/2006	01/25/2006
Matrix	AIR	AIR	AIR	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)							
DIBROMOCHLOROMETHANE	6.5 U	65 U	6.5 U	6.5 U	6.5 U	32 U	65 U
DICHLORODIFLUOROMETHANE	5.5 UJ	55 UJ	5.5 UJ	5.5 UJ	5.5 UJ	28 UJ	55 UJ
DICHLOROTETRAFLUOROETHANE	5.5 UJ	55 UJ	5.5 UJ	5.5 UJ	5.5 UJ	28 UJ	55 UJ
ETHYL ACETATE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
ETHYLBENZENE	5 U	50 U	**120**	**13**	5 U	25 U	**110**
ETHYLENE DIBROMIDE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
HEPTANE	5 U	**120**	**94**	5 U	5 U	25 U	**59**
HEXACHLOROBUTADIENE	11 UJ	110 UJ	11 UJ	11 UJ	11 UJ	55 UJ	110 UJ
HEXANE	5 U	50 U	**44**	5 U	5 U	25 U	50 U
ISOPROPYL ALCOHOL	10,000 U	**55,000**	**16,000**	**14,000**	10,000 U	**20,000**	**37,000**
M,P-XYLENE	**5.7**	50 U	**200**	**19**	5 U	25 U	**270**
METHYL-T-BUTYL ETHER	5 U	50 U	5 U	5 U	5 U	25 U	50 U
METHYLENE CHLORIDE	**5**	**87**	**6.5**	5 U	5 U	25 U	50 U
O-XYLENE	**5.1**	50 U	**170**	**18**	5 U	25 U	**360**
PROPYLENE	10 U	100 U	**53**	10 U	10 U	50 U	100 U
STYRENE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
TETRACHLOROETHENE	5 U	50 U	**120**	**58**	5 U	25 U	**760**
TETRAHYDROFURAN	5 U	**240**	**130**	**54**	**20**	**170**	**230**
TOLUENE	**14**	**76**	**110**	**18**	**6.1**	25 U	**54**
TRANS-1,2-DICHLOROETHENE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
TRANS-1,3-DICHLOROPROPENE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
TRICHLOROETHENE	5 U	**300**	**44**	**67**	**90**	25 U	50 U
TRICHLOROFLUOROMETHANE	5 U	50 U	**8.4**	5 U	5 U	25 U	50 U
TRICHLOROTRIFLUOROETHANE	6 U	**87**	**140**	**34**	**9.1**	30 U	60 U
VINYL ACETATE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
VINYL BROMIDE	5 U	50 U	5 U	5 U	5 U	25 U	50 U
VINYL CHLORIDE	5 U	50 U	5 U	5 U	5 U	25 U	50 U

TABLE B-1: JANUARY 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 14 Alameda Point, Alameda, California

Sample Location ID	014SG-09	014SG-10	014SG-11	014SG-11
Sample ID	014SG-09-001	014SG-10-001	014SG-11-001	014SG-11-002
Sample Date	01/25/2006	01/25/2006	01/25/2006	01/25/2006
Matrix	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)				
1,1,1-TRICHLOROETHANE	5 U	5 U	50 U	50 U
1,1,2,2-TETRACHLOROETHANE	6 UJ	6 UJ	60 UJ	60 UJ
1,1,2-TRICHLOROETHANE	5 U	5 U	50 U	50 U
1,1-DICHLOROETHANE	5 U	5 U	50 U	50 U
1,1-DICHLOROETHENE	5 U	5 U	50 U	50 U
1,2,4-TRICHLOROBENZENE	20 UJ	20 UJ	200 UJ	200 UJ
1,2,4-TRIMETHYLBENZENE	**12 J**	**7.5 J**	50 UJ	50 UJ
1,2-DICHLOROBENZENE	10 UJ	10 UJ	100 UJ	100 UJ
1,2-DICHLOROETHANE	5 U	5 U	50 U	50 U
1,2-DICHLOROPROPANE	5 U	5 U	50 U	50 U
1,3,5-TRIMETHYLBENZENE	5 U	5 U	50 U	50 U
1,3-BUTADIENE	5 U	5 U	50 U	50 U
1,3-DICHLOROBENZENE	10 UJ	10 UJ	100 UJ	100 UJ
1,4-DICHLOROBENZENE	10 UJ	10 UJ	100 UJ	100 UJ
1,4-DIOXANE	5.5 U	5.5 U	55 U	55 U
2,2,4-TRIMETHYLPENTANE	**95**	**11**	50 U	50 U
2-BUTANONE	**80**	**31**	**210**	**290**
2-HEXANONE	5 U	5 U	50 U	50 U
3-CHLOROPROPENE	5 U	5 U	50 U	50 U
4-ETHYL TOLUENE	**7.8**	5 U	50 UJ	50 UJ
4-METHYL-2-PENTANONE	**83**	**74**	**210**	**210**
ACETONE	**130**	**82**	200 U	200 U
BENZENE	5 U	5 U	50 U	50 U
BENZYL CHLORIDE	10 U	10 U	100 U	100 U
BROMODICHLOROMETHANE	5 U	5 U	50 U	50 U
BROMOFORM	5 U	5 U	50 U	50 U
BROMOMETHANE	5 U	5 U	50 U	50 U
CARBON DISULFIDE	5 U	5 U	50 U	50 U
CARBON TETRACHLORIDE	5.5 U	5.5 U	55 U	55 U
CHLOROBENZENE	5 U	5 U	50 U	50 U
CHLOROETHANE	5 U	5 U	50 U	50 U
CHLOROFORM	5 U	**12**	50 U	50 U
CHLOROMETHANE	5 U	5 U	50 U	50 U
CIS-1,2-DICHLOROETHENE	5 U	5 U	50 U	50 U
CIS-1,3-DICHLOROPROPENE	5 U	5 U	50 U	50 U
CYCLOHEXANE	5 U	5 U	50 U	50 U

TABLE B-1: JANUARY 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 14 Alameda Point, Alameda, California

Sample Location ID	014SG-09	014SG-10	014SG-11	014SG-11
Sample ID	014SG-09-001	014SG-10-001	014SG-11-001	014SG-11-002
Sample Date	01/25/2006	01/25/2006	01/25/2006	01/25/2006
Matrix	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)				
DIBROMOCHLOROMETHANE	6.5 U	6.5 U	65 U	65 U
DICHLORODIFLUOROMETHANE	5.5 UJ	5.5 UJ	55 UJ	55 UJ
DICHLOROTETRAFLUOROETHANE	5.5 UJ	5.5 UJ	55 UJ	55 UJ
ETHYL ACETATE	5 U	5 U	50 U	50 U
ETHYLBENZENE	**9.3**	**8**	50 U	50 U
ETHYLENE DIBROMIDE	5 U	5 U	50 U	50 U
HEPTANE	**6.6**	5 U	50 U	50 U
HEXACHLOROBUTADIENE	11 UJ	11 UJ	110 UJ	110 UJ
HEXANE	**6.2**	5 U	50 U	50 U
ISOPROPYL ALCOHOL	**11,000**	**12,000**	**46,000**	**57,000**
M,P-XYLENE	**21**	5 U	50 U	50 U
METHYL-T-BUTYL ETHER	5 U	5 U	50 U	50 U
METHYLENE CHLORIDE	5 U	5 U	50 U	50 U
O-XYLENE	**17**	5 U	50 U	50 U
PROPYLENE	10 U	10 U	100 U	100 U
STYRENE	5 U	5 U	50 U	50 U
TETRACHLOROETHENE	5 U	5 U	50 U	50 U
TETRAHYDROFURAN	**110**	**40**	**490**	**670**
TOLUENE	**56**	**14**	50 U	50 U
TRANS-1,2-DICHLOROETHENE	5 U	5 U	50 U	50 U
TRANS-1,3-DICHLOROPROPENE	5 U	5 U	50 U	50 U
TRICHLOROETHENE	5 U	5 U	50 U	50 U
TRICHLOROFLUOROMETHANE	5 U	5 U	50 U	50 U
TRICHLOROTRIFLUOROETHANE	**22**	**12**	60 U	60 U
VINYL ACETATE	5 U	5 U	50 U	50 U
VINYL BROMIDE	5 U	5 U	50 U	50 U
VINYL CHLORIDE	5 U	5 U	50 U	50 U

Notes: Detected analytes are printed in bold.

ID Identification

J Estimated value

U Nondetected

TABLE B-2: JANUARY 2006 SOIL GAS ANALYTICAL RESULTS

Building 113 Alameda Point, Alameda, California

Sample Location ID	113SG-01	113SG-02	113SG-03
Sample ID	113SG-01-001	113SG-02-001	113SG-03-001
Sample Date	01/25/2006	01/25/2006	01/25/2006
Matrix	AIR	AIR	AIR
EPA TO-15 (UG/M3)			
1,1,1-TRICHLOROETHANE	5 U	25 U	120 U
1,1,2,2-TETRACHLOROETHANE	6 UJ	30 UJ	150 UJ
1,1,2-TRICHLOROETHANE	5 U	25 U	120 U
1,1-DICHLOROETHANE	5 U	25 U	120 U
1,1-DICHLOROETHENE	5 U	25 U	120 U
1,2,4-TRICHLOROBENZENE	20 UJ	100 UJ	500 UJ
1,2,4-TRIMETHYLBENZENE	**12 J**	25 UJ	120 UJ
1,2-DICHLOROBENZENE	10 UJ	50 UJ	250 UJ
1,2-DICHLOROETHANE	5 U	25 U	120 U
1,2-DICHLOROPROPANE	5 U	25 U	120 U
1,3,5-TRIMETHYLBENZENE	5 U	25 U	120 U
1,3-BUTADIENE	5 U	25 U	120 U
1,3-DICHLOROBENZENE	10 UJ	50 UJ	250 UJ
1,4-DICHLOROBENZENE	10 UJ	50 UJ	250 UJ
1,4-DIOXANE	5.5 U	28 U	140 U
2,2,4-TRIMETHYLPENTANE	5 U	25 U	**380**
2-BUTANONE	**85**	**120**	120 U
2-HEXANONE	5 U	25 U	120 U
3-CHLOROPROPENE	5 U	25 U	120 U
4-ETHYL TOLUENE	**7.9**	25 UJ	120 UJ
4-METHYL-2-PENTANONE	**55**	**81**	120 U
ACETONE	**35**	100 U	500 U
BENZENE	5 U	25 U	**140**
BENZYL CHLORIDE	10 U	50 U	250 U
BROMODICHLOROMETHANE	5 U	25 U	120 U
BROMOFORM	5 U	25 U	120 U
BROMOMETHANE	5 U	25 U	120 U
CARBON DISULFIDE	5 U	25 U	120 U
CARBON TETRACHLORIDE	5.5 U	28 U	140 U
CHLOROBENZENE	5 U	25 U	120 U
CHLOROETHANE	5 U	25 U	120 U
CHLOROFORM	5 U	25 U	120 U
CHLOROMETHANE	5 U	25 U	120 U
CIS-1,2-DICHLOROETHENE	5 U	25 U	120 U
CIS-1,3-DICHLOROPROPENE	5 U	25 U	120 U
CYCLOHEXANE	5 U	25 U	120 U

TABLE B-2: JANUARY 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 113 Alameda Point, Alameda, California

Sample Location ID	**113SG-01**	**113SG-02**	**113SG-03**
Sample ID	113SG-01-001	113SG-02-001	113SG-03-001
Sample Date	01/25/2006	01/25/2006	01/25/2006
Matrix	AIR	AIR	AIR
EPA TO-15 (UG/M3)			
DIBROMOCHLOROMETHANE	6.5 U	32 U	160 U
DICHLORODIFLUOROMETHANE	5.5 UJ	28 UJ	140 UJ
DICHLOROTETRAFLUOROETHANE	5.5 UJ	28 UJ	140 UJ
ETHYL ACETATE	5 U	25 U	120 U
ETHYLBENZENE	**8.8**	25 U	120 U
ETHYLENE DIBROMIDE	5 U	25 U	120 U
HEPTANE	5 U	25 U	**170**
HEXACHLOROBUTADIENE	11 UJ	55 UJ	280 UJ
HEXANE	5 U	25 U	120 U
ISOPROPYL ALCOHOL	10,000 U	**21,000**	**100,000**
M,P-XYLENE	**5.4**	25 U	120 U
METHYL-T-BUTYL ETHER	5 U	25 U	120 U
METHYLENE CHLORIDE	5 U	25 U	120 U
O-XYLENE	**5.2**	25 U	120 U
PROPYLENE	10 U	50 U	250 U
STYRENE	5 U	25 U	120 U
TETRACHLOROETHENE	5 U	25 U	120 U
TETRAHYDROFURAN	**190**	**280**	120 U
TOLUENE	**9.1**	25 U	120 U
TRANS-1,2-DICHLOROETHENE	5 U	25 U	120 U
TRANS-1,3-DICHLOROPROPENE	5 U	25 U	120 U
TRICHLOROETHENE	**15**	**25**	**1,100**
TRICHLOROFLUOROMETHANE	5 U	25 U	120 U
TRICHLOROTRIFLUOROETHANE	6 U	30 U	150 U
VINYL ACETATE	5 U	25 U	120 U
VINYL BROMIDE	5 U	25 U	120 U
VINYL CHLORIDE	5 U	25 U	120 U

Notes: Detected analytes are printed in bold.

ID Identification

J Estimated value

U Nondetected

TABLE B-3: JANUARY 2006 SOIL GAS ANALYTICAL RESULTS

Building 162 Alameda Point, Alameda, California

Sample Location ID	162SG-01	162SG-02	162SG-03	162SG-04	162SG-05	162SG-05	162SG-06
Sample ID	162SG-01-001	162SG-02-001	162SG-03-001	162SG-04-001	162SG-05-001	162SG-05-002	162SG-06-001
Sample Date	01/26/2006	01/26/2006	01/26/2006	01/27/2006	01/26/2006	01/26/2006	01/26/2006
Matrix	AIR	AIR	AIR	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)							
1,1,1-TRICHLOROETHANE	**51**	50 U	**38**	25 U	25 U	25 U	**30**
1,1,2,2-TETRACHLOROETHANE	60 UJ	60 UJ	30 UJ	30 UJ	30 UJ	30 UJ	30 UJ
1,1,2-TRICHLOROETHANE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
1,1-DICHLOROETHANE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
1,1-DICHLOROETHENE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
1,2,4-TRICHLOROBENZENE	200 UJ	200 UJ	100 UJ	100 UJ	100 UJ	100 UJ	100 UJ
1,2,4-TRIMETHYLBENZENE	**50 J**	50 UJ	25 UJ	25 UJ	25 UJ	25 UJ	25 UJ
1,2-DICHLOROBENZENE	100 UJ	100 UJ	50 UJ	50 UJ	50 UJ	50 UJ	50 UJ
1,2-DICHLOROETHANE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
1,2-DICHLOROPROPANE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
1,3,5-TRIMETHYLBENZENE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
1,3-BUTADIENE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
1,3-DICHLOROBENZENE	100 UJ	100 UJ	50 UJ	50 UJ	50 UJ	50 UJ	50 UJ
1,4-DICHLOROBENZENE	100 UJ	100 UJ	50 UJ	50 UJ	50 UJ	50 UJ	50 UJ
1,4-DIOXANE	55 U	55 U	28 U	28 U	28 U	28 U	28 U
2,2,4-TRIMETHYLPENTANE	**99**	50 U	**33**	25 U	25 U	25 U	25 U
2-BUTANONE	**72**	**110**	**81**	**50**	25 U	25 U	**41**
2-HEXANONE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
3-CHLOROPROPENE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
4-ETHYL TOLUENE	50 U	50 U	25 U	25 U	25 UJ	25 U	25 UJ
4-METHYL-2-PENTANONE	**120**	**94**	**78**	**130**	**54**	**72**	**62**
ACETONE	200 U	200 U	**160**	100 U	100 U	100 U	100 U
BENZENE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
BENZYL CHLORIDE	100 U	100 U	50 U	50 U	50 U	50 U	50 U
BROMODICHLOROMETHANE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
BROMOFORM	50 U	50 U	25 U	25 U	25 U	25 U	25 U
BROMOMETHANE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
CARBON DISULFIDE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
CARBON TETRACHLORIDE	55 U	55 U	28 U	28 U	28 U	28 U	28 U
CHLOROBENZENE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
CHLOROETHANE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
CHLOROFORM	**53**	50 U	25 U	25 U	25 U	25 U	**25**
CHLOROMETHANE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
CIS-1,2-DICHLOROETHENE	50 U	50 U	25 U	**34**	25 U	25 U	**25**
CIS-1,3-DICHLOROPROPENE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
CYCLOHEXANE	50 U	50 U	25 U	25 U	25 U	25 U	25 U

TABLE B-3: JANUARY 2006 SOIL GAS ANALYTICAL RESULTS (Continued)
Building 162 Alameda Point, Alameda, California

Sample Location ID	162SG-01	162SG-02	162SG-03	162SG-04	162SG-05	162SG-05	162SG-06
Sample ID	162SG-01-001	162SG-02-001	162SG-03-001	162SG-04-001	162SG-05-001	162SG-05-002	162SG-06-001
Sample Date	01/26/2006	01/26/2006	01/26/2006	01/27/2006	01/26/2006	01/26/2006	01/26/2006
Matrix	AIR	AIR	AIR	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)							
DIBROMOCHLOROMETHANE	65 U	65 U	32 U	32 U	32 U	32 U	32 U
DICHLORODIFLUOROMETHANE	55 UJ	55 UJ	28 UJ	28 UJ	28 UJ	28 UJ	28 UJ
DICHLOROTETRAFLUOROETHANE	55 UJ	55 UJ	28 UJ	28 UJ	28 UJ	28 UJ	28 UJ
ETHYL ACETATE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
ETHYLBENZENE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
ETHYLENE DIBROMIDE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
HEPTANE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
HEXACHLOROBUTADIENE	110 UJ	110 UJ	55 UJ	55 UJ	55 UJ	55 UJ	55 UJ
HEXANE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
ISOPROPYL ALCOHOL	**36,000**	**37,000**	**23,000**	**22,000**	**17,000**	**19,000**	**21,000**
M,P-XYLENE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
METHYL-T-BUTYL ETHER	50 U	50 U	25 U	25 U	25 U	25 U	25 U
METHYLENE CHLORIDE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
O-XYLENE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
PROPYLENE	100 U	100 U	50 U	50 U	50 U	50 U	50 U
STYRENE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
TETRACHLOROETHENE	50 U	50 U	**53**	25 U	25 U	25 U	25 U
TETRAHYDROFURAN	**170**	**200**	**150**	**96**	25 U	**28**	**71**
TOLUENE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
TRANS-1,2-DICHLOROETHENE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
TRANS-1,3-DICHLOROPROPENE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
TRICHLOROETHENE	**3,000**	**310**	**3,600**	**1,100**	**520**	**500**	**2,700**
TRICHLOROFLUOROMETHANE	50 U	50 U	25 U	25 U	25 U	25 U	**26**
TRICHLOROTRIFLUOROETHANE	60 U	60 U	30 U	30 U	30 U	30 U	**36**
VINYL ACETATE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
VINYL BROMIDE	50 U	50 U	25 U	25 U	25 U	25 U	25 U
VINYL CHLORIDE	50 U	50 U	25 U	25 U	25 U	25 U	25 U

TABLE B-3: JANUARY 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 162 Alameda Point, Alameda, California

Sample Location ID	162SG-07	162SG-08	162SG-09	162SG-10	162SG-11	162SG-12	162SG-13
Sample ID	162SG-07-001	162SG-08-001	162SG-09-001	162SG-10-001	162SG-11-001	162SG-12-001	162SG-13-001
Sample Date	01/26/2006	01/26/2006	01/26/2006	01/26/2006	01/26/2006	01/26/2006	01/26/2006
Matrix	AIR	AIR	AIR	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)							
1,1,1-TRICHLOROETHANE	50 U	**40**	**58**	25 U	**11**	25 U	50 U
1,1,2,2-TETRACHLOROETHANE	60 UJ	30 UJ	60 UJ	30 UJ	6 UJ	30 UJ	60 UJ
1,1,2-TRICHLOROETHANE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
1,1-DICHLOROETHANE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
1,1-DICHLOROETHENE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
1,2,4-TRICHLOROBENZENE	200 UJ	100 UJ	200 UJ	100 UJ	20 UJ	100 UJ	200 UJ
1,2,4-TRIMETHYLBENZENE	50 UJ	25 UJ	50 UJ	25 UJ	**5.6 J**	25 UJ	50 UJ
1,2-DICHLOROBENZENE	100 UJ	50 UJ	100 UJ	50 UJ	10 UJ	50 UJ	100 UJ
1,2-DICHLOROETHANE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
1,2-DICHLOROPROPANE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
1,3,5-TRIMETHYLBENZENE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
1,3-BUTADIENE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
1,3-DICHLOROBENZENE	100 UJ	50 UJ	100 UJ	50 UJ	10 UJ	50 UJ	100 UJ
1,4-DICHLOROBENZENE	100 UJ	50 UJ	100 UJ	50 UJ	10 UJ	50 UJ	100 UJ
1,4-DIOXANE	55 U	28 U	55 U	28 U	5.5 U	28 U	55 U
2,2,4-TRIMETHYLPENTANE	50 U	25 U	**68**	25 U	5 U	**53**	50 U
2-BUTANONE	50 U	**52**	**66**	**36**	**51**	**42**	50 U
2-HEXANONE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
3-CHLOROPROPENE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
4-ETHYL TOLUENE	50 UJ	25 UJ	50 UJ	25 UJ	5 U	25 U	50 U
4-METHYL-2-PENTANONE	**150**	**82**	**160**	25 U	**81**	**190**	**95**
ACETONE	200 U	100 U	200 U	100 U	**46**	100 U	**280**
BENZENE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
BENZYL CHLORIDE	100 U	50 U	100 U	50 U	10 U	50 U	100 U
BROMODICHLOROMETHANE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
BROMOFORM	50 U	25 U	50 U	25 U	5 U	25 U	50 U
BROMOMETHANE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
CARBON DISULFIDE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
CARBON TETRACHLORIDE	55 U	28 U	55 U	28 U	5.5 U	28 U	55 U
CHLOROBENZENE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
CHLOROETHANE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
CHLOROFORM	50 U	**99**	50 U	25 U	**11**	25 U	50 U
CHLOROMETHANE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
CIS-1,2-DICHLOROETHENE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
CIS-1,3-DICHLOROPROPENE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
CYCLOHEXANE	50 U	25 U	50 U	25 U	5 U	25 U	**1,300**

TABLE B-3: JANUARY 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 162 Alameda Point, Alameda, California

Sample Location ID	162SG-07	162SG-08	162SG-09	162SG-10	162SG-11	162SG-12	162SG-13
Sample ID	162SG-07-001	162SG-08-001	162SG-09-001	162SG-10-001	162SG-11-001	162SG-12-001	162SG-13-001
Sample Date	01/26/2006	01/26/2006	01/26/2006	01/26/2006	01/26/2006	01/26/2006	01/26/2006
Matrix	AIR	AIR	AIR	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)							
DIBROMOCHLOROMETHANE	65 U	32 U	65 U	32 U	6.5 U	32 U	65 U
DICHLORODIFLUOROMETHANE	55 UJ	28 UJ	55 UJ	28 UJ	5.5 UJ	28 UJ	55 UJ
DICHLOROTETRAFLUOROETHANE	55 UJ	28 UJ	55 UJ	28 UJ	5.5 UJ	28 UJ	55 UJ
ETHYL ACETATE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
ETHYLBENZENE	50 U	25 U	50 U	25 U	5 U	25 U	**98**
ETHYLENE DIBROMIDE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
HEPTANE	50 U	25 U	50 U	25 U	5 U	25 U	**6,400**
HEXACHLOROBUTADIENE	110 UJ	55 UJ	110 UJ	55 UJ	11 UJ	55 UJ	110 UJ
HEXANE	50 U	25 U	50 U	25 U	5 U	25 U	**73**
ISOPROPYL ALCOHOL	**42,000**	**26,000**	**46,000**	**24,000**	**10,000**	**37,000**	10,000 U
M,P-XYLENE	50 U	25 U	50 U	25 U	5 U	25 U	**140**
METHYL-T-BUTYL ETHER	50 U	25 U	50 U	25 U	5 U	25 U	50 U
METHYLENE CHLORIDE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
O-XYLENE	50 U	25 U	50 U	25 U	5 U	25 U	**82**
PROPYLENE	100 U	50 U	100 U	50 U	10 U	50 U	100 U
STYRENE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
TETRACHLOROETHENE	50 U	**32**	**76**	25 U	5 U	25 U	50 U
TETRAHYDROFURAN	50 U	**110**	**130**	**98**	**110**	**67**	50 U
TOLUENE	50 U	25 U	50 U	25 U	**6.2**	25 U	**450**
TRANS-1,2-DICHLOROETHENE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
TRANS-1,3-DICHLOROPROPENE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
TRICHLOROETHENE	**3,700**	**4,200**	**1,900**	25 U	**7.5**	**2,200**	**12,000**
TRICHLOROFLUOROMETHANE	50 U	25 U	50 U	25 U	5 U	**28**	**110**
TRICHLOROTRIFLUOROETHANE	**220**	**790**	**130**	**74**	6 U	30 U	60 U
VINYL ACETATE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
VINYL BROMIDE	50 U	25 U	50 U	25 U	5 U	25 U	50 U
VINYL CHLORIDE	50 U	25 U	50 U	25 U	5 U	25 U	50 U

TABLE B-3: JANUARY 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 162 Alameda Point, Alameda, California

Sample Location ID	162SG-14	162SG-15	162SG-16	162SG-16	162SG-17	162SG-18	162SG-19
Sample ID	162SG-14-001	162SG-15-001	162SG-16-001	162SG-16-002	162SG-17-001	162SG-18-001	162SG-19-001
Sample Date	01/26/2006	01/26/2006	01/26/2006	01/26/2006	01/26/2006	01/27/2006	01/27/2006
Matrix	AIR	AIR	AIR	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)							
1,1,1-TRICHLOROETHANE	25 U	100 U	25 U	**10**	50 U	50 U	50 U
1,1,2,2-TETRACHLOROETHANE	30 UJ	120 UJ	30 UJ	12 UJ	60 UJ	60 UJ	60 UJ
1,1,2-TRICHLOROETHANE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
1,1-DICHLOROETHANE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
1,1-DICHLOROETHENE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
1,2,4-TRICHLOROBENZENE	100 UJ	400 UJ	100 UJ	40 UJ	200 UJ	200 UJ	200 UJ
1,2,4-TRIMETHYLBENZENE	25 UJ	100 UJ	25 UJ	10 UJ	50 UJ	50 UJ	50 UJ
1,2-DICHLOROBENZENE	50 UJ	200 UJ	50 UJ	20 UJ	100 UJ	100 UJ	100 UJ
1,2-DICHLOROETHANE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
1,2-DICHLOROPROPANE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
1,3,5-TRIMETHYLBENZENE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
1,3-BUTADIENE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
1,3-DICHLOROBENZENE	50 UJ	200 UJ	50 UJ	20 UJ	100 UJ	100 UJ	100 UJ
1,4-DICHLOROBENZENE	50 UJ	200 UJ	50 UJ	20 UJ	100 UJ	100 UJ	100 UJ
1,4-DIOXANE	28 U	110 U	28 U	11 U	55 U	55 U	55 U
2,2,4-TRIMETHYLPENTANE	25 U	**400**	25 U	10 U	50 U	50 U	50 U
2-BUTANONE	**66**	100 U	25 U	**17**	50 U	**64**	50 U
2-HEXANONE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
3-CHLOROPROPENE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
4-ETHYL TOLUENE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
4-METHYL-2-PENTANONE	**150**	100 U	**52**	**34**	**160**	**150**	**170**
ACETONE	**160**	400 U	100 U	**41**	200 U	200 U	**8,500**
BENZENE	25 U	**140**	25 U	10 U	50 U	50 U	50 U
BENZYL CHLORIDE	50 U	200 U	50 U	20 U	100 U	100 U	100 U
BROMODICHLOROMETHANE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
BROMOFORM	25 U	100 U	25 U	10 U	50 U	50 U	50 U
BROMOMETHANE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
CARBON DISULFIDE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
CARBON TETRACHLORIDE	28 U	110 U	28 U	11 U	55 U	55 U	55 U
CHLOROBENZENE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
CHLOROETHANE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
CHLOROFORM	25 U	100 U	25 U	10 U	50 U	50 U	50 U
CHLOROMETHANE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
CIS-1,2-DICHLOROETHENE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
CIS-1,3-DICHLOROPROPENE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
CYCLOHEXANE	25 U	100 U	25 U	10 U	50 U	50 U	50 U

TABLE B-3: JANUARY 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 162 Alameda Point, Alameda, California

Sample Location ID	162SG-14	162SG-15	162SG-16	162SG-16	162SG-17	162SG-18	162SG-19
Sample ID	162SG-14-001	162SG-15-001	162SG-16-001	162SG-16-002	162SG-17-001	162SG-18-001	162SG-19-001
Sample Date	01/26/2006	01/26/2006	01/26/2006	01/26/2006	01/26/2006	01/27/2006	01/27/2006
Matrix	AIR	AIR	AIR	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)							
DIBROMOCHLOROMETHANE	32 U	130 U	32 U	13 U	65 U	65 U	65 U
DICHLORODIFLUOROMETHANE	28 UJ	110 UJ	28 UJ	11 UJ	55 UJ	55 UJ	55 UJ
DICHLOROTETRAFLUOROETHANE	28 UJ	110 UJ	28 UJ	11 UJ	55 UJ	55 UJ	55 UJ
ETHYL ACETATE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
ETHYLBENZENE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
ETHYLENE DIBROMIDE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
HEPTANE	25 U	**170**	25 U	10 U	50 U	50 U	50 U
HEXACHLOROBUTADIENE	55 UJ	220 UJ	55 UJ	22 UJ	110 UJ	110 UJ	110 UJ
HEXANE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
ISOPROPYL ALCOHOL	**30,000**	20,000 U	5,000 U	**7,100**	**39,000**	**42,000**	**43,000**
M,P-XYLENE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
METHYL-T-BUTYL ETHER	25 U	100 U	25 U	10 U	50 U	50 U	50 U
METHYLENE CHLORIDE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
O-XYLENE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
PROPYLENE	50 U	200 U	50 U	20 U	100 U	100 U	100 U
STYRENE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
TETRACHLOROETHENE	**53**	100 U	25 U	**13**	50 U	**150**	50 U
TETRAHYDROFURAN	**120**	100 U	25 U	**24**	**100**	**120**	**95**
TOLUENE	**30**	100 U	25 U	10 U	50 U	50 U	50 U
TRANS-1,2-DICHLOROETHENE	25 U	100 U	25 U	**13**	50 U	50 U	50 U
TRANS-1,3-DICHLOROPROPENE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
TRICHLOROETHENE	**11,000**	**8,300**	**4,500**	**4,300**	**72**	**740**	50 U
TRICHLOROFLUOROMETHANE	**100**	100 U	25 U	10 U	50 U	50 U	50 U
TRICHLOROTRIFLUOROETHANE	**41**	**280**	**340**	**250**	60 U	**66**	60 U
VINYL ACETATE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
VINYL BROMIDE	25 U	100 U	25 U	10 U	50 U	50 U	50 U
VINYL CHLORIDE	25 U	100 U	25 U	10 U	50 U	50 U	50 U

TABLE B-3: JANUARY 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 162 Alameda Point, Alameda, California

Sample Location ID	162SG-20	162SG-21
Sample ID	162SG-20-001	162SG-21-001
Sample Date	01/26/2006	01/27/2006
Matrix	AIR	AIR
EPA TO-15 (UG/M3)		
1,1,1-TRICHLOROETHANE	25 U	50 U
1,1,2,2-TETRACHLOROETHANE	30 UJ	60 UJ
1,1,2-TRICHLOROETHANE	25 U	50 U
1,1-DICHLOROETHANE	25 U	50 U
1,1-DICHLOROETHENE	25 U	50 U
1,2,4-TRICHLOROBENZENE	100 UJ	200 UJ
1,2,4-TRIMETHYLBENZENE	25 UJ	50 UJ
1,2-DICHLOROBENZENE	50 UJ	100 UJ
1,2-DICHLOROETHANE	25 U	50 U
1,2-DICHLOROPROPANE	25 U	50 U
1,3,5-TRIMETHYLBENZENE	25 U	50 U
1,3-BUTADIENE	25 U	50 U
1,3-DICHLOROBENZENE	50 UJ	100 UJ
1,4-DICHLOROBENZENE	50 UJ	100 UJ
1,4-DIOXANE	28 U	55 U
2,2,4-TRIMETHYLPENTANE	25 U	50 U
2-BUTANONE	**73**	**130**
2-HEXANONE	25 U	50 U
3-CHLOROPROPENE	25 U	50 U
4-ETHYL TOLUENE	25 U	50 U
4-METHYL-2-PENTANONE	**110**	**170**
ACETONE	100 U	200 U
BENZENE	25 U	50 U
BENZYL CHLORIDE	50 U	100 U
BROMODICHLOROMETHANE	25 U	50 U
BROMOFORM	25 U	50 U
BROMOMETHANE	25 U	50 U
CARBON DISULFIDE	25 U	50 U
CARBON TETRACHLORIDE	28 U	55 U
CHLOROBENZENE	25 U	50 U
CHLOROETHANE	25 U	50 U
CHLOROFORM	25 U	50 U
CHLOROMETHANE	25 U	50 U
CIS-1,2-DICHLOROETHENE	25 U	50 U
CIS-1,3-DICHLOROPROPENE	25 U	50 U
CYCLOHEXANE	25 U	50 U

TABLE B-3: JANUARY 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 162 Alameda Point, Alameda, California

Sample Location ID	162SG-20	162SG-21
Sample ID	162SG-20-001	162SG-21-001
Sample Date	01/26/2006	01/27/2006
Matrix	AIR	AIR
EPA TO-15 (UG/M3)		
DIBROMOCHLOROMETHANE	32 U	65 U
DICHLORODIFLUOROMETHANE	28 UJ	55 UJ
DICHLOROTETRAFLUOROETHANE	28 UJ	55 UJ
ETHYL ACETATE	25 U	50 U
ETHYLBENZENE	25 U	50 U
ETHYLENE DIBROMIDE	25 U	50 U
HEPTANE	25 U	50 U
HEXACHLOROBUTADIENE	55 UJ	110 UJ
HEXANE	25 U	50 U
ISOPROPYL ALCOHOL	**22,000**	10,000 U
M,P-XYLENE	25 U	50 U
METHYL-T-BUTYL ETHER	25 U	50 U
METHYLENE CHLORIDE	25 U	50 U
O-XYLENE	25 U	50 U
PROPYLENE	50 U	100 U
STYRENE	25 U	50 U
TETRACHLOROETHENE	25 U	**74**
TETRAHYDROFURAN	**170**	**280**
TOLUENE	25 U	50 U
TRANS-1,2-DICHLOROETHENE	25 U	50 U
TRANS-1,3-DICHLOROPROPENE	25 U	50 U
TRICHLOROETHENE	**1,700**	**3,000**
TRICHLOROFLUOROMETHANE	25 U	50 U
TRICHLOROTRIFLUOROETHANE	**72**	**190**
VINYL ACETATE	25 U	50 U
VINYL BROMIDE	25 U	50 U
VINYL CHLORIDE	25 U	50 U

Notes: Detected analytes are printed in bold.

ID Identification

J Estimated value

U Nondetected

TABLE B-4: JANUARY 2006 SOIL GAS ANALYTICAL RESULTS

Building 163A Alameda Point, Alameda, California

Sample Location ID	163SG-01	163SG-01	163SG-02
Sample ID	163SG-01-001	163SG-01-002	163SG-02-001
Sample Date	01/27/2006	01/27/2006	01/27/2006
Matrix	AIR	AIR	AIR
EPA TO-15 (UG/M3)			
1,1,1-TRICHLOROETHANE	**32**	**14**	**12**
1,1,2,2-TETRACHLOROETHANE	6 UJ	6 UJ	12 UJ
1,1,2-TRICHLOROETHANE	5 U	5 U	10 U
1,1-DICHLOROETHANE	**22**	**9.5**	**52**
1,1-DICHLOROETHENE	5 U	5 U	10 U
1,2,4-TRICHLOROBENZENE	20 UJ	20 UJ	40 UJ
1,2,4-TRIMETHYLBENZENE	**7.1 J**	**6.9 J**	10 UJ
1,2-DICHLOROBENZENE	10 UJ	10 UJ	20 UJ
1,2-DICHLOROETHANE	5 U	5 U	10 U
1,2-DICHLOROPROPANE	5 U	5 U	10 U
1,3,5-TRIMETHYLBENZENE	5 U	5 U	10 U
1,3-BUTADIENE	5 U	5 U	10 U
1,3-DICHLOROBENZENE	10 UJ	10 UJ	20 UJ
1,4-DICHLOROBENZENE	10 UJ	10 UJ	20 UJ
1,4-DIOXANE	5.5 U	5.5 U	11 U
2,2,4-TRIMETHYLPENTANE	5 U	**17**	**21**
2-BUTANONE	**18**	**17**	**84**
2-HEXANONE	5 U	5 U	10 U
3-CHLOROPROPENE	5 U	5 U	10 U
4-ETHYL TOLUENE	5 U	5 U	10 U
4-METHYL-2-PENTANONE	**27**	**18**	**110**
ACETONE	**65**	**51**	**130**
BENZENE	5 U	5 U	10 U
BENZYL CHLORIDE	10 U	10 U	20 U
BROMODICHLOROMETHANE	5 U	5 U	10 U
BROMOFORM	5 U	5 U	10 U
BROMOMETHANE	5 U	5 U	10 U
CARBON DISULFIDE	5 U	5 U	10 U
CARBON TETRACHLORIDE	5.5 U	5.5 U	11 U
CHLOROBENZENE	5 U	5 U	10 U
CHLOROETHANE	5 U	5 U	10 U
CHLOROFORM	**6.8**	5 U	**14**
CHLOROMETHANE	5 U	5 U	10 U
CIS-1,2-DICHLOROETHENE	**260**	**110**	**5,800**
CIS-1,3-DICHLOROPROPENE	5 U	5 U	10 U
CYCLOHEXANE	5 U	5 U	10 U

TABLE B-4: JANUARY 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 163A Alameda Point, Alameda, California

Sample Location ID	163SG-01	163SG-01	163SG-02
Sample ID	163SG-01-001	163SG-01-002	163SG-02-001
Sample Date	01/27/2006	01/27/2006	01/27/2006
Matrix	AIR	AIR	AIR
EPA TO-15 (UG/M3)			
DIBROMOCHLOROMETHANE	6.5 U	6.5 U	13 U
DICHLORODIFLUOROMETHANE	5.5 UJ	5.5 UJ	11 UJ
DICHLOROTETRAFLUOROETHANE	5.5 UJ	5.5 UJ	11 UJ
ETHYL ACETATE	5 U	5 U	10 U
ETHYLBENZENE	5 U	5 U	10 U
ETHYLENE DIBROMIDE	5 U	5 U	10 U
HEPTANE	5 U	5 U	10 U
HEXACHLOROBUTADIENE	11 UJ	11 UJ	22 UJ
HEXANE	5 U	5 U	10 U
ISOPROPYL ALCOHOL	10,000 U	10,000 U	**14,000**
M,P-XYLENE	**7.2**	**7.6**	10 U
METHYL-T-BUTYL ETHER	5 U	5 U	10 U
METHYLENE CHLORIDE	5 U	5 U	10 U
O-XYLENE	**5.6**	**5.4**	10 U
PROPYLENE	10 U	10 U	20 U
STYRENE	5 U	5 U	10 U
TETRACHLOROETHENE	5 U	5 U	10 U
TETRAHYDROFURAN	**16**	**19**	**160**
TOLUENE	**9.1**	**19**	**21**
TRANS-1,2-DICHLOROETHENE	**42**	**18**	**260**
TRANS-1,3-DICHLOROPROPENE	5 U	5 U	10 U
TRICHLOROETHENE	**2,500**	**940**	**9,600**
TRICHLOROFLUOROMETHANE	5 U	5 U	10 U
TRICHLOROTRIFLUOROETHANE	**26**	**14**	12 U
VINYL ACETATE	5 U	5 U	10 U
VINYL BROMIDE	5 U	5 U	10 U
VINYL CHLORIDE	5 U	5 U	10 U

Notes: Detected analytes are printed in bold.

- ID Identification
- J Estimated value
- U Nondetected

TABLE B-5: JANUARY 2006 SOIL GAS ANALYTICAL RESULTS

Building 398 Alameda Point, Alameda, California

Sample Location ID	398SG-01	398SG-02	398SG-03	398SG-04	398SG-05	398SG-06
Sample ID	398SG-01-001	398SG-02-001	398SG-03-001	398SG-04-001	398SG-05-001	398SG-06-001
Sample Date	01/26/2006	01/26/2006	01/26/2006	01/26/2006	01/26/2006	01/26/2006
Matrix	AIR	AIR	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)						
1,1,1-TRICHLOROETHANE	**71**	25 U	**32**	**39**	**47**	100 U
1,1,2,2-TETRACHLOROETHANE	60 UJ	30 UJ	12 UJ	30 UJ	30 UJ	120 UJ
1,1,2-TRICHLOROETHANE	50 U	25 U	10 U	25 U	25 U	100 U
1,1-DICHLOROETHANE	50 U	25 U	10 U	25 U	25 U	100 U
1,1-DICHLOROETHENE	50 U	25 U	10 U	25 U	25 U	100 U
1,2,4-TRICHLOROBENZENE	200 UJ	100 UJ	40 UJ	100 UJ	100 UJ	400 UJ
1,2,4-TRIMETHYLBENZENE	50 UJ	25 UJ	10 UJ	25 UJ	25 UJ	100 UJ
1,2-DICHLOROBENZENE	100 UJ	50 UJ	20 UJ	50 UJ	50 UJ	200 UJ
1,2-DICHLOROETHANE	50 U	25 U	10 U	25 U	25 U	100 U
1,2-DICHLOROPROPANE	50 U	25 U	10 U	25 U	25 U	**190**
1,3,5-TRIMETHYLBENZENE	50 U	25 U	10 U	25 U	25 U	100 U
1,3-BUTADIENE	50 U	25 U	10 U	25 U	25 U	100 U
1,3-DICHLOROBENZENE	100 UJ	50 UJ	20 UJ	50 UJ	50 UJ	200 UJ
1,4-DICHLOROBENZENE	100 UJ	50 UJ	20 UJ	50 UJ	50 UJ	200 UJ
1,4-DIOXANE	55 U	28 U	11 U	28 U	28 U	110 U
2,2,4-TRIMETHYLPENTANE	50 U	25 U	10 U	25 U	25 U	**630**
2-BUTANONE	**130**	**140**	**66**	**77**	**120**	100 U
2-HEXANONE	50 U	25 U	10 U	25 U	25 U	100 U
3-CHLOROPROPENE	50 U	25 U	10 U	25 U	25 U	100 U
4-ETHYL TOLUENE	50 UJ	25 UJ	10 UJ	25 UJ	25 UJ	100 UJ
4-METHYL-2-PENTANONE	**97**	**71**	**42**	**62**	**81**	100 U
ACETONE	200 U	**130**	**89**	100 U	100 U	400 U
BENZENE	50 U	25 U	10 U	25 U	25 U	**100**
BENZYL CHLORIDE	100 U	50 U	20 U	50 U	50 U	200 U
BROMODICHLOROMETHANE	50 U	25 U	10 U	25 U	25 U	100 U
BROMOFORM	50 U	25 U	10 U	25 U	25 U	100 U
BROMOMETHANE	50 U	25 U	10 U	25 U	25 U	100 U
CARBON DISULFIDE	50 U	25 U	10 U	25 U	25 U	100 U
CARBON TETRACHLORIDE	55 U	28 U	11 U	28 U	28 U	110 U
CHLOROBENZENE	50 U	25 U	10 U	25 U	25 U	100 U
CHLOROETHANE	50 U	25 U	10 U	25 U	25 U	100 U
CHLOROFORM	50 U	25 U	10 U	**27**	25 U	100 U
CHLOROMETHANE	50 U	25 U	10 U	25 U	25 U	100 U
CIS-1,2-DICHLOROETHENE	50 U	25 U	10 U	25 U	25 U	100 U
CIS-1,3-DICHLOROPROPENE	50 U	25 U	10 U	25 U	25 U	100 U
CYCLOHEXANE	50 U	25 U	10 U	25 U	25 U	100 U

TABLE B-5: JANUARY 2006 SOIL GAS ANALYTICAL RESULTS (Continued)

Building 398 Alameda Point, Alameda, California

Sample Location ID	398SG-01	398SG-02	398SG-03	398SG-04	398SG-05	398SG-06
Sample ID	398SG-01-001	398SG-02-001	398SG-03-001	398SG-04-001	398SG-05-001	398SG-06-001
Sample Date	01/26/2006	01/26/2006	01/26/2006	01/26/2006	01/26/2006	01/26/2006
Matrix	AIR	AIR	AIR	AIR	AIR	AIR
EPA TO-15 (UG/M3)						
DIBROMOCHLOROMETHANE	65 U	32 U	13 U	32 U	32 U	130 U
DICHLORODIFLUOROMETHANE	55 UJ	28 UJ	11 UJ	28 UJ	28 UJ	110 UJ
DICHLOROTETRAFLUOROETHANE	55 UJ	28 UJ	11 UJ	28 UJ	28 UJ	110 UJ
ETHYL ACETATE	50 U	25 U	10 U	25 U	25 U	100 U
ETHYLBENZENE	50 U	25 U	**14**	25 U	25 U	100 U
ETHYLENE DIBROMIDE	50 U	25 U	10 U	25 U	25 U	100 U
HEPTANE	50 U	25 U	10 U	25 U	25 U	**130**
HEXACHLOROBUTADIENE	110 UJ	55 UJ	22 UJ	55 UJ	55 UJ	220 UJ
HEXANE	50 U	25 U	10 U	25 U	25 U	100 U
ISOPROPYL ALCOHOL	**36,000**	**29,000**	**13,000**	**21,000**	**23,000**	**42,000**
M,P-XYLENE	50 U	25 U	**13**	25 U	25 U	100 U
METHYL-T-BUTYL ETHER	50 U	25 U	10 U	25 U	25 U	100 U
METHYLENE CHLORIDE	50 U	25 U	10 U	25 U	25 U	100 U
O-XYLENE	50 U	25 U	10 U	25 U	25 U	100 U
PROPYLENE	100 U	50 U	20 U	50 U	50 U	200 U
STYRENE	50 U	25 U	**16**	25 U	25 U	100 U
TETRACHLOROETHENE	50 U	25 U	**76**	**38**	25 U	100 U
TETRAHYDROFURAN	**270**	**310**	**150**	**180**	**300**	100 U
TOLUENE	50 U	25 U	**13**	25 U	25 U	100 U
TRANS-1,2-DICHLOROETHENE	50 U	25 U	10 U	25 U	25 U	100 U
TRANS-1,3-DICHLOROPROPENE	50 U	25 U	10 U	25 U	25 U	100 U
TRICHLOROETHENE	50 U	25 U	**1,300**	**230**	25 U	100 U
TRICHLOROFLUOROMETHANE	50 U	25 U	10 U	25 U	25 U	100 U
TRICHLOROTRIFLUOROETHANE	60 U	30 U	**16**	30 U	30 U	120 U
VINYL ACETATE	50 U	25 U	10 U	25 U	25 U	100 U
VINYL BROMIDE	50 U	25 U	10 U	25 U	25 U	100 U
VINYL CHLORIDE	50 U	25 U	10 U	25 U	25 U	100 U

Notes: Detected analytes are printed in bold.

ID Identification

J Estimated value

U Nondetected

APPENDIX C
SEPTEMBER 2006 AND MARCH 2007 DATA VALIDATION

TABLE OF CONTENTS

C1.0 DATA VALIDATION C-1

C2.0 EVALUATION SUMMARY C-2

- C2.1 PRECISION C-2
- C2.2 ACCURACY C-2
- C2.3 REPRESENTATIVENESS C-2
- C2.4 COMPLETENESS C-3
- C2.5 COMPARABILITY C-3

C3.0 CONCLUSIONS FOR DATA QUALITY AND DATA USABILITY C-3

C4.0 REFERENCES C-4

C1.0 DATA VALIDATION

All soil gas data collected during this investigation were validated by The Data Validation Group in Rancho Santa Margarita, California. Data validation is a systematic process for reviewing and qualifying data against a set of criteria to determine whether they are adequate for their intended use. The laboratory analytical data were validated according to procedures outlined in the following documents:

- U.S. Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) National Functional Guidelines for Organic (EPA 1999c)
- Tetra Tech EM Inc. (Tetra Tech) Data Validation Statement of Work (Tetra Tech 2005)
- Draft Final Sampling and Analysis Plan (Field Sampling Plan/Quality Assurance Project Plan), Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398, Alameda Point, Alameda California. (SAP) (SulTech 2005)
- Analytical methods associated with "Compendium Method TO [Toxic Organics]-15, Determination of Volatile Organic Compounds (VOC) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry" (EPA 1999b)

Data validation occurred in two stages: (1) a cursory review of the analytical reports and the quality assurance (QA) and quality control (QC) information was conducted on 100 percent of the chemical data, and (2) a full review of the analytical reports, the QA and QC information, and the associated raw data was conducted on 10 percent of the chemical data. The cursory review evaluated the effect of the most critical QA and QC information, such as holding times, calibration requirements, and spiking accuracy, on the data. The full review evaluated additional QA and QC criteria and used the raw data to check calculations and analyte identifications. At each stage of validation, qualifiers were assigned to the results in the electronic database in accordance with EPA guidelines (EPA 1999c), the SAP (SulTech 2005), and Compendium Method TO-15 (EPA 1999b).

The overall objective of data validation was to determine whether the quality of the chemical data set was adequate for its intended purpose, as defined by the precision, accuracy, representativeness, completeness, and comparability (PARCC) parameters in EPA guidance (EPA 1997). The following tasks were completed to assess PARCC parameters:

- Review precision and accuracy of laboratory QC data
- Review precision and accuracy of field QC data
- Review the overall analytical process, including holding times, calibrations, analytical or matrix performance, and analyte identification and quantitation

- Assign qualifiers to data affected when QA and QC criteria were not achieved
- Review and summarize implications of the frequency and severity of qualifiers in the validated data

C2.0 EVALUATION SUMMARY

This section discusses the overall data quality, including the PARCC parameters, as determined by the data validation.

C2.1 PRECISION

Precision is a measure of the reproducibility of an experimental value without regard to the true or reference value. The primary indicators of site data precision were the relative percent differences between the samples and the sample duplicates. Soil gas duplicate samples were collected from four locations, 113SG-03, 162SG-06, 162SG-09, and 398SG-01. Although several chemicals had relative percent differences exceeding 25 percent in four samples, relative percent differences for all chemicals with detections exceeding the reporting limit were within 25 percent.

C2.2 ACCURACY

Accuracy assesses the proximity of an experimental value to the true or reference value. The primary accuracy indicators were the recoveries of laboratory control samples (LCS) spikes. Although several chemicals were qualified as estimated due to low LCS recoveries, no data were rejected based on accuracy violations indicating the organic analyses were consistently accurate.

C2.3 REPRESENTATIVENESS

Representativeness refers to the ability of sample data to reflect true environmental conditions. Determinants of representativeness include sampling locations, frequency, collection procedures, and possible compromises to sample integrity (such as cross-contamination) that can occur during collection, transport, and analysis. Selection of representative sampling sites is important to obtaining samples that accurately show site conditions. Correct sample collection, transport, and analytical procedures are important to ensure that samples closely resemble the medium sampled and to minimize contamination.

For the soil gas data presented in this report, the sampling locations, frequency, and collection protocols were described in the SAP (SulTech 2005). These protocols followed standard accepted methods of site characterization and were approved by the regulatory agencies. Thus, with respect to accepted site characterization approaches, existing guidance, and regulatory compliance, the sampling program for this investigation met all relevant requirements for data representativeness.

C2.4 COMPLETENESS

Completeness is defined as the percentage of analytical results considered valid. Valid data are those identified as acceptable or qualified as estimated (J) during the data validation process. Data qualified as rejected (R) are considered unusable and not valid. For the soil gas investigation, no data were rejected during the cursory or full data validation review.

The assessment of completeness consisted of comparing the amount of acceptable and usable results to the total number of results. The data evaluated in this data validation summary indicate a completeness of 100 percent. The completeness goal of 90 percent for field samples and laboratory samples established in the SAP (SulTech 2005) was exceeded.

C2.5 COMPARABILITY

Comparability is a qualitative assessment of how well one data set compares to another. The important determinants of comparability include the uniformity of sampling activities, analytical procedures, data reporting, and data validation. The use of EPA protocols, specific and well-documented analyses, approved laboratories, and the standardized process of data review and validation give the soil gas data a high degree of analytical comparability. The use of well-established analytical protocols ensures that the data are comparable.

C3.0 CONCLUSIONS FOR DATA QUALITY AND DATA USABILITY

The EPA "Risk Assessment Guidance for Superfund" (RAGS) was used to determine the usability of the validated data (EPA 1989). Exhibit 5-5 in RAGS states that data qualified as estimated (J) based on data validation reports is acceptable for use in quantitative risk assessments. Although some qualifiers were added to the data, a final review of the data set with respect to the data quality objectives discussed previously indicated that the data are of high overall quality. The data meet all the requirements of the PARCC data quality indicators described in EPA guidance for quality assurance project plans (EPA 1997) and are usable for risk assessment.. All supporting documentation and data are available upon request, including cursory and full validation reports and the database containing all sample results.

C4.0 REFERENCES

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APPENDIX D
RESPONSES TO REGULATORY AGENCY COMMENTS

RESPONSES TO REGULATORY AGENCY COMMENTS ON THE DRAFT TECHNICAL MEMORANDUM, SECOND SAMPLING EVENT RESULTS, SUBSLAB SOIL GAS INVESTIGATION OF BUILDINGS 14, 113, 162, 163A, AND 398 ALAMEDA POINT, ALAMEDA, CALIFORNIA

This document presents the Navy's responses to comments submitted by the regulatory agencies on the "Draft Technical Memorandum, Second Sampling Event Results, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398, Alameda Point, Alameda, California," dated August 13, 2007. The comments addressed below were received from the Department of Toxic Substances Control (DTSC) Geological Services Unit (GSU) on September 13, 2007; from Dan Gallagher of DTSC on September 13, 2007; and from James Polisini of DTSC on September 21, 2007.

RESPONSES TO COMMENTS FROM DTSC GEOLOGICAL SERVICES UNIT (GSU)

General Comments

1. **Comment:** **GSU requests that supporting field documentation such as daily field logs and purging and sampling records be provided. Please also provide the analytical data package from the laboratory including chain-of-custody records. In addition, GSU requests that the output files from the vapor intrusion modeling be provided. This information may be provided on a compact disk in the Draft Final Technical Memorandum as was done for the first round of sampling.**

   Response: Copies of the field logbook, field data sheets, chain-of-custody forms, laboratory analytical reports, data validation reports, and data files from the vapor intrusion modeling will be provided on a compact disc in the Draft Final Technical Memorandum.

Specific Comments

1. **Comment:** <u>Section 3.1 – Leak Testing Results</u>. **Overall, the quality of the data from the second round (September 2006) appears to be improved over the first round (January 2006) as evidenced by the much lower rate of ambient air intrusion (at least one order of magnitude lower). GSU questions whether the improvement can be attributed to the change in purge methods from syringes to Summa canisters. Please discuss the reason(s) for the change in purge methods, and the possible reason(s) for the lower leak rate detected in September 2006.**

   Response: The change in the equipment used to purge was solely a result of the change in laboratories. The laboratories provided the Summa canisters and purging equipment. N&P Mobile Geochemistry provided the syringe system to purge the stagnant air for the first sampling event and for the resampling in March 2007; and AirToxics Ltd. provided the manifold system equipped with pressure gauges and a 6-liter Summa canister for the second sampling event.

The lower leak rate detected in September 2006 may be the result of (1) better housekeeping, or (2) use of ties on the Tygon tubing that was attached to the probe. The isopropyl alcohol (IPA) solution and spent cotton balls using for the leak testing were separated from the purging and sampling equipment to reduce the possibility for cross contamination. Both the sampling equipment and IPA solution and spent cotton balls were kept on the cart used to transport the equipments from one location to another during the first round of sampling. In addition, zip ties were not used during the first sampling event, but were used during the second and resampling events to reduce possible leakage.

2. **Comment:** **Section 4.6 – Uncertainty Analysis. It is stated in the third paragraph that over time, concentrations can decrease as chemicals move from one medium to another and from location to location within a particular medium. It is further stated that the overall available mass of a chemical may decrease as the chemical is lost through transformation or degradation processes, and that concentrations to which receptors are exposed would, therefore, decrease over time. However, it should be noted that the source of trichloroethylene (TCE) beneath Building 163A is unknown and may be related to soil sources beneath the building. Immobile soil contamination can act as a continuing source to soil vapor for many years. In addition, it should be noted that the chemicals that were detected in soil vapor were TCE and cis-1,2-dichloroethylene (cis-1,2-DCE) which ultimately degrade to vinyl chloride (a more toxic and volatile compound). Therefore, while TCE and cis-1,2-DCE concentrations and mass may decrease over time, vinyl chloride concentrations and mass may increase over time. Please revise this discussion to reflect this information.**

Response: The intent of the third paragraph of the uncertainty analysis is to indicate that chemical concentrations may decrease over time but does not attempt to quantify the rate at which this decrease may occur. The source of TCE beneath Building 163A is likely from solvents used at Building 360. TCE was detected in soil at boring B04-43 located on the west side of Building 360 and is currently being remediated by a six-phase heating / soil vapor extraction system. The Navy acknowledges that immobile soil contamination can act as a continuing source for many years and may reduce the rate at which the concentrations decrease; however, it does not invalidate the statement that chemical concentrations can decrease over time.

The Navy acknowledges that some vinyl chloride may be produced during the dechlorination process of TCE and cis-1,2-DCE. However, vinyl chloride can be further dechlorinated to ethylene and ethane. The following text will be added to the third paragraph of the uncertainty analysis to address this concern: "In addition, concentrations of certain chemicals may increase during transformation or degradation processes. For example, concentrations of vinyl chloride may initially increase during dechlorination of chlorinated solvents. However, vinyl chloride may be further dechlorinated to ethylene or ethane, thereby reducing concentrations of vinyl chloride."

3. **Comment:** **Section 6.0 – Recommendations. GSU agrees with the re-sampling of probes in Building 163A and requests that the timing of the sampling be September/October 2007 to coincide with the timing of the dry season samples collected previously.**

Response: Comment noted.

RESPONSES TO COMMENTS FROM DAN GALLAGHER OF DTSC

General Comments

1. **Comment:** **Soil Gas Samples. As indicated by the soil gas sampling results in Appendix B, 36 of 46 sampling results had a leak check compound concentration of 10 ug/L or greater. While Benton and Shafer (2006) attempted to quantify leak volumes, it is impossible to determine the concentration of the leak detection compound as it enters the soil gas sampling system and hence it is impossible to know the amount of sample dilution based on the observed concentration of the compound in the sample. This can only be done if the entire soil gas sampling system is enclosed within a shroud or tent. Nonetheless, the sampling results from January 2006 are biased low. While these sampling results were not integrated into the risk assessment, some of the sampling results of January 2006 had higher contaminant concentrations than the other sampling events (see comment below). Likewise, of lesser concern, although still significant, 10 of 46 samples in Appendix A had a leak check compound concentration of greater than 1 ug/L. The occurrence of the leak check compound in these samples, which were used to quantify the risk for the buildings, should have been discussed in the uncertainty section.**

Response: The leak test evaluation and reference to Benton and Shafer 2006 will be deleted from Section 3.1. The Navy acknowledges that the results of the leak testing indicate that leakage occurred and that there is the potential for dilution in the January sampling results. The January 2006 sampling results were integrated into the risk assessment presented in the technical memorandum that became final on December 20, 2006. The following text will be added to the uncertainty section: "The results of the leak testing indicate that leakage occurred during sampling at some locations; therefore, the analytical results are biased low for Buildings 14, 113, 163, and 398. Isopropyl alcohol (the leak testing compound) was not detected in any of the samples collected from the probes inside Building 163A."

2. **Comment:** **Johnson and Ettinger Modeling. Making a reasonable prediction of vapor intrusion into a building with the Johnson and Ettinger model is challenging. Hers, et al. (2003) states that, "when quality site-specific data is available for both soil properties (e.g., moisture content) and building properties (e.g., ventilation rate, mixing height), it may be possible to reduce the uncertainty in attenuation factor to approximately one order of magnitude." Due to the inability of the Johnson and Ettinger model to predict any better than one order of magnitude, a sensitivity analysis of the model should be included in the uncertainty section of the report so that appropriate risk management decisions can be made. The input parameters that should be evaluated, at a minimum, are soil volumetric water content, soil volumetric air content, total porosity, and soil gas advection rate. DTSC recommends that the sensitivity analysis be conducted in a similar manner to that described by Johnson (2002).**

Response: As stated in Section 4.3.1, soil overlying groundwater at the site consisted primarily of sand. Total soil porosity, water-filled soil porosity, and air-filled porosity were calculated based on default parameters for sand provided in the model. In addition, the soil gas advection rate was estimated by adjusting the model default of 5 liters per minute (L/m) proportionally based on dimension, as recommended by DTSC. Given that default parameters were selected for each of these input parameters, a sensitivity analysis will not be conducted for this evaluation. This approach is consistent with the 2006 technical memorandum (SulTech 2006) reviewed and commented on by the DTSC (DTSC 2006).

3. **Comment:** **Attenuation Factors. Subslab Soil Gas Samples. Pursuant to DTSC (2004), subslab attenuation factors should not be determined by the Johnson and Ettinger (2001) model. When evaluating vapor intrusion with subslab soil gas samples, a subslab attenuation factor of 0.01 should be used in lieu of fate and transport modeling. The use of a default attenuation factor for subslab evaluations is advocated by**

USEPA (2002) and DTSC adopted a similar approach in our vapor intrusion guidance document. The default subslab attenuation factor of 0.01 is derived from USEPA's empirical database (Hers, et al., 2005).

Response: Initial concurrence by DTSC for the attenuation factors used in the technical memorandum was provided in DTSC 2007; therefore, the current methodology will be retained.

4. **Comment:** **<u>Open Field Soil Gas Samples.</u> No evaluation of the future building scenario was conducted using the soil gas results from the open areas at the site. For soil gas samples collected away from buildings in open areas, the soil gas concentration nearest the contaminant source should be used for modeling purposes. As noted by Abreu et al. (2005) and Abreu et al. (2006), soil gas samples should be collected right above contaminant sources when the sources are within 10 feet (3 meters) of the surface. For deep contaminant sources, soil gas samples should be collected at least 10 feet (3 meters) below grade. Deeper sampling would be needed for buildings with basements. Determining the exposure point concentrations from these depths is warranted due to building depressurization which causes vapors to accumulate under foundations at higher concentrations than those observed in open field measurements.**

Response: The scope of the soil gas investigation is to evaluate potential risk from vapor intrusion to current building occupants. Only the buildings that are leased and occupied by tenant (Building 14, 113, 162, 163A, and 398) and that overlie the volatile organic compound (VOC) plume are being investigated.

5. **Comment:** <u>Statistical Evaluation</u>. **Tables 6 –11 provide a statistical evaluation of data for the September 2006 or March 2007 sampling events. However, the data from the January 2006 sampling event was not integrated into the statistical evaluation. Even though numerous samples from January 2006 sampling event were compromised as indicated by the leak check compound, in many instances, the highest concentration of subsurface contaminants were observed during this sampling event. The below table summarizes these observations.**

BUILDING	SAMPLE	CHEMICAL	CONCENTRATION (ug/m^3)
14	014SG-08-001	Tetrachloroethene	760
14	014SG-11-002	Tetrahydrofuran	670
162	162SG-21-001	Tetrahydrofuran	280
163A	163SG-02-001	Tetrahydrofuran	160
398	398SG-06-001	1,2-Dichloropropane	190
398	398SG-06-001	2,2,4-Trimethylpentane	630
398	398SG-06-001	Benzene	100

Response: The Navy acknowledges that some results from the January 2006 sampling event were higher than results from the September 2006 and March 2007 sampling events. The January 2006 statistical evaluation is provided in a technical memorandum that became final on December 20, 2006 (SulTech 2006).

RESPONSES TO COMMENTS FROM DTSC HUMAN AND ECOLOGICAL RISK DIVISION (HERD)

General Comments

1. **Comment:** **Naphthalene should be added to the list of analytes in future subslab soil gas sampling. Although EPA Method TO-15 recoveries of naphthalene may be variable (Hayes, et al., 2005), naphthalene can apparently be accurately measured by EPA method TO-15 being used in this investigation as long as correct naphthalene standards with appropriate moisture content are used.**

Response: Based on comments received on the 2006 technical memorandum (Sultech 2006), naphthalene was included as an analyte in the September 2006 and March 2007 sampling event. Naphthalene will be included to the list of analytes for future sampling.

Specific Comments

1. **Comment:** **Given the extensive area of NASA with low level soil concentrations of Polycyclic Aromatic Hydrocarbons (PAHs), previously studied (Section 1.5.1, page 4), naphthalene should be added to the list of analytes for future soil gas sampling. Naphthalene can apparently be accurately measured by EPA method TO-15 being used in this investigation (http://www.airtoxics.com/literature/AirToxics8260vTO15.pdf) as**

long as correct naphthalene standards with appropriate moisture content are used.

Response: Please see response to General Comment 1 from DTSC HERD.

2. **Comment:** **Based on the total VOC concentration and photoionization detector (PID) screening, all 46 samples collected during the September 2006 sampling required dilution (Section 3.4, page 15; Table 3) prior to analysis by EPA method TO-15, resulting in reporting limits exceeding those specified in Table B-1 of the Sampling and Analysis Plan (SAP). However, it appears that dilution caused detection limits to exceed both sets of screening criteria, especially in samples 162SG-15 and 163SG-02 with dilution factors of 35 and 199 respectively. Concentrations of six VOCs exceeded the ESL and the CHHSL in the March 2007 re-sampling of Building 163A (Section 3.4, page 15). This comment is meant for the DTSC Project Manager and no response is required from the Navy or Navy contractor.**

Response: Comment noted.

3. **Comment:** **The extent of Volatile Organic Compound (VOC) contamination in soil, groundwater and Non-Aqueous Phase Liquid (NAPL) (Section 1.5.1, page 6) as indicated by soil gas VOC concentrations, is presented as two bounded areas encompassing all or a portion of the buildings evaluated in this Technical Memorandum (Figure 3). If groundwater samples are available in this area, the sample locations, without sample results, should be presented on the figure. Otherwise, HERD recommends that samples be collected between the two bounded areas (e.g., between Building 162 and Building 398) to determine whether there are two distinct groundwater VOC plumes.**

Response: Groundwater samples have been collected between Building 162 and 398, and TCE and other VOCs were not detected in groundwater between these two building, as shown on Figure 9-15 for the remedial investigation report (included as attachment to the responses to comments); therefore, two distinct groundwater VOC plumes are shown on Figure 3.

4. **Comment:** **The non-default model inputs to the Johnson and Ettinger model appear appropriate site-specific values (Section 4.3, pages 17 and 18; Table 18). This comment is meant for the DTSC Project Manager and no response is required from the Navy or Navy contractors.**

Response: Comment noted.

5. **Comment:** **The industrial/commercial scenario risk-based screening criteria are the San Francisco Regional Water Quality Control Board (SFRWQCB, 2005) Environmental Screening Levels (ESLs) and the Office of Environmental Health Hazard Assessment (OEHHA) California Human Health Screening Levels (CHSSLs) (Section 2.6, page 10 and Table 4). These industrial/commercial scenario air concentrations exceed the residential (unrestricted use) risk-based concentrations presented in the ESL reference and the U.S. EPA Region 9 Preliminary Remediation Goal (PRG) tabulation. The results of the subslab soil gas sampling should be incorporated into a complete HHRA which includes a residential (unrestricted use) scenario for any future risk assessment documents that include areas of the groundwater VOC contamination investigated in this report.**

Response: Please see response to General Comment 4 from Mr. Gallagher. A human health risk assessment for future unrestricted use is not part of the scope of this investigation.

6. **Comment:** **All VOCs detected in soil gas at each occupied building at Operable Unit (OU)-2B were evaluated for the indoor air pathway (Section 4.1, page 16). No screening process was employed to reduce the number of Contaminants of Potential Concern (COPCs). This comment is meant for the DTSC Project Manager and no response is required from the Navy or Navy contractors.**

Response: Comment noted.

7. **Comment:** **The site-specific attenuation factors (Table 19) are within the range of default attenuation factors recommended for existing and future buildings (DTSC, 2005; Table 2). However, HERD was unable to exactly duplicate the calculations. Please forward the Johnson and Ettinger model DATAENTER and INTERCALC work sheets for Building 163A as well as the complete Building Parameter (Section 4.3.2, page 17) 'adjustment' calculations for the Building 163A volume. The work sheets and volume 'adjustment' for Building 163A can be furnished informally by e-mail to jpolisin@dstc.ca.gov**

Response: DATAENTER and INTERCALC worksheets, as well as an explanation of the volume adjustment for Building 163A, will be provided via e-mail.

8. **Comment:** **The cancer risk and non-cancer hazard values presented in the text (Section 4.5, pages 20 and 21), are those presented in the detailed table (Table 19). This comment is meant for the DTSC Project Manager and no response is required from the Navy or Navy contractors.**

Response: Comment noted.

9. **Comment:** **Inhalation Cancer Slope Factors (CSFs) and Reference Doses (RfDs) (Table 19) were checked and found to be correct. The more conservative U.S. EPA National Center of Environmental Assessment (NCEA) cancer slope factor (CSF) of 0.4 $(mg/kg\text{-}day)^{-1}$ is used for trichloroethylene (TCE) rather than the less protective OEHHA TCE CSF of 0.007 $(mg/kg\text{-}day)^{-1}$. This comment is meant for the DTSC Project Manager and no response is required from the Navy or Navy contractors.**

Response: Comment noted.

10. **Comment:** **The U.S. EPA statistical program for calculating the Exposure Point Concentration (EPC) has been updated from the ProUCL 3.0 used to estimate the groundwater EPC (Section 4.3.3, page 18) to ProUCL 4 (http://www.epa.gov/esd/tsc/software.htm). EPCs need not be recalculated for this investigation, but future HHRA documents should utilize the updated version.**

Response: Comment noted.

11. **Comment:** **The statistical methods applied (Helsel, 2005) to calculate the Exposure Point Concentration (EPC) using samples reported as 20 to 85 percent non-detect (Tables 12 through 17, footnote b) have not yet been validated by HERD. However, given the relative small difference between the maximum concentration and the calculated EPC using these methods HERD accepts the application of these methods for this investigation.**

Response: Comment noted.

REFERENCES

Department of Toxic Substances Control (DTSC). 2006. "Review of Technical Memorandum, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398, Alameda Point, Alameda County." From Dot Lofstrom, Project Manager. To Mr. Thomas L. Macchiarella, Code BPMOW.TLM. October 3.

DTSC. 2007. "Review of the Draft Technical Memorandum, Second Sampling Event Results, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A, and 398, Alameda Point, Alameda County." From Dot Lofstrom, Project Manager. To Mr. Thomas L. Macchiarella, Code BPMOW.TLM. September.

SulTech. 2005. "Draft Final Sampling and Analysis Plan (Field Sampling Plan/Quality Assurance Project Plan), Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A and 398, Alameda Point Alameda, California." November 18.

SulTech. 2006. "Final Technical Memorandum Subslab Soil Gas Investigation of Building 14, 113, 162, 163A, and 398, Alameda Point Alameda, California." December 20.

U.S. Environmental Protection Agency (EPA). 2006. "Technical Memorandum Subslab Soil Gas Investigation of Building 14, 113, 162, 163A, and 398, Alameda Point." From Anna-Marie Cook, Remedial Project Manager. To Mr. Thomas L. Macchiarella, Code 06CA.TM. August 31.